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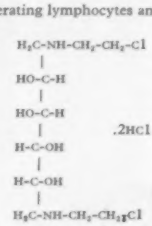

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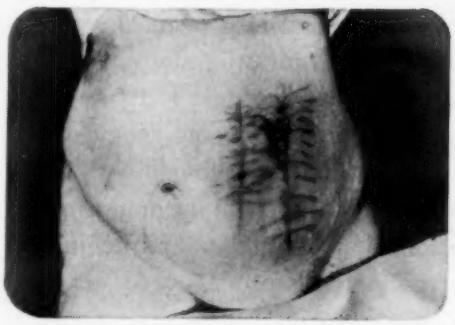

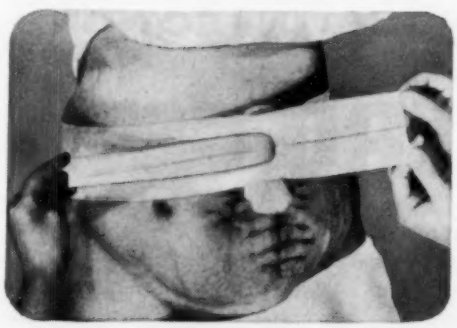

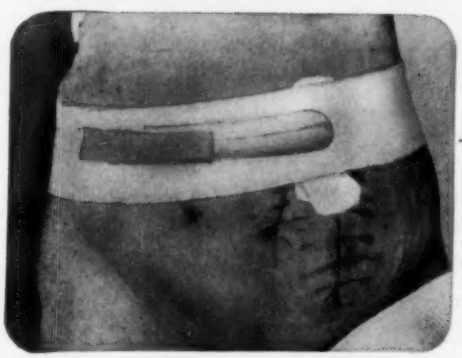

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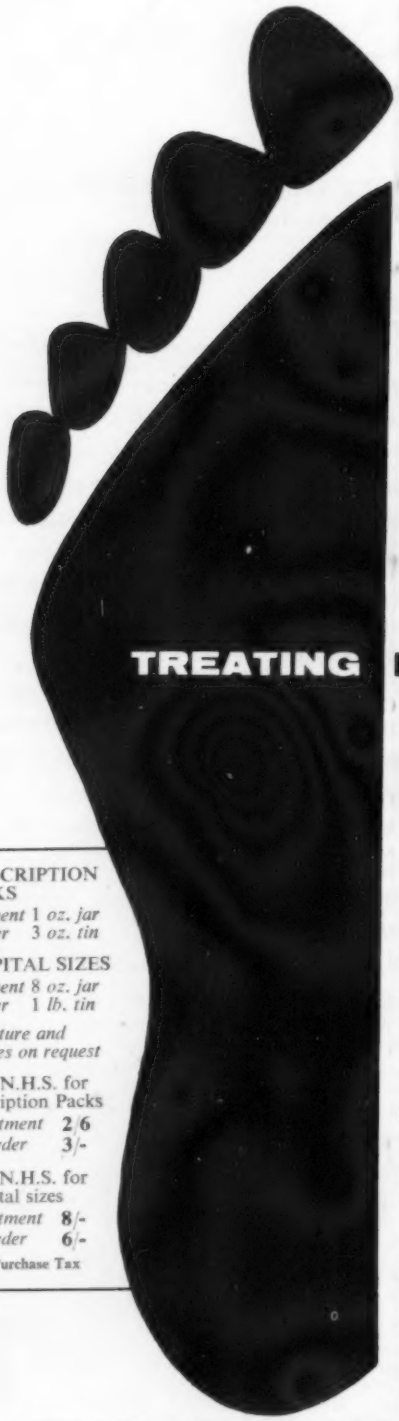

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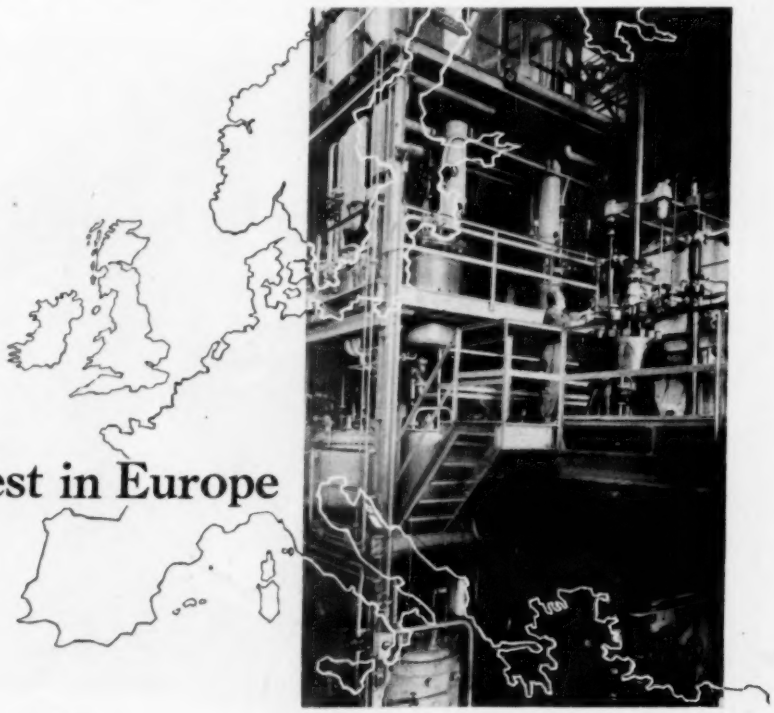

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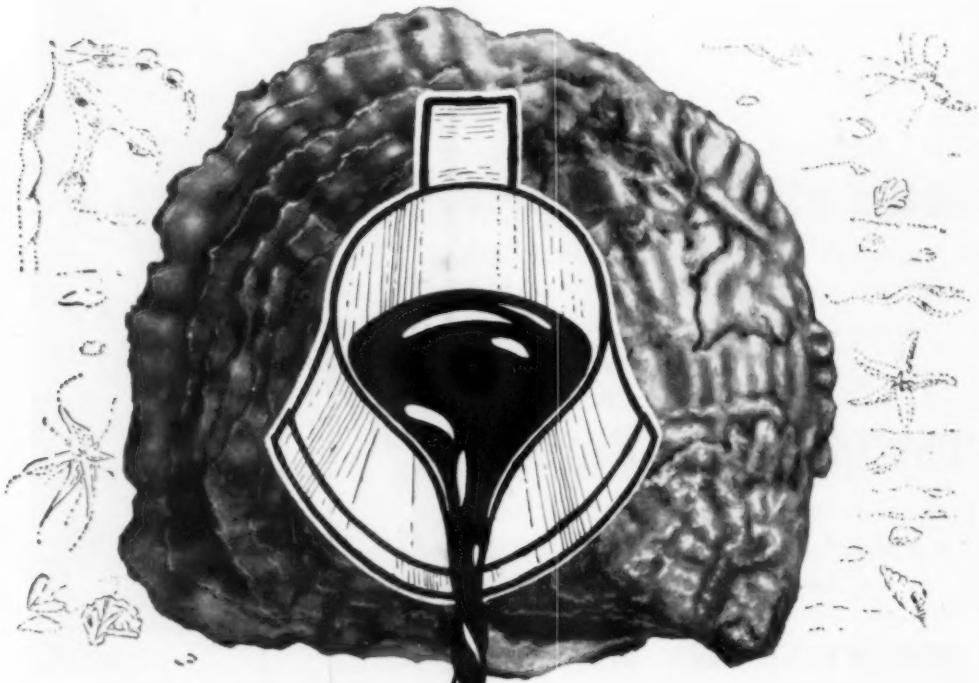

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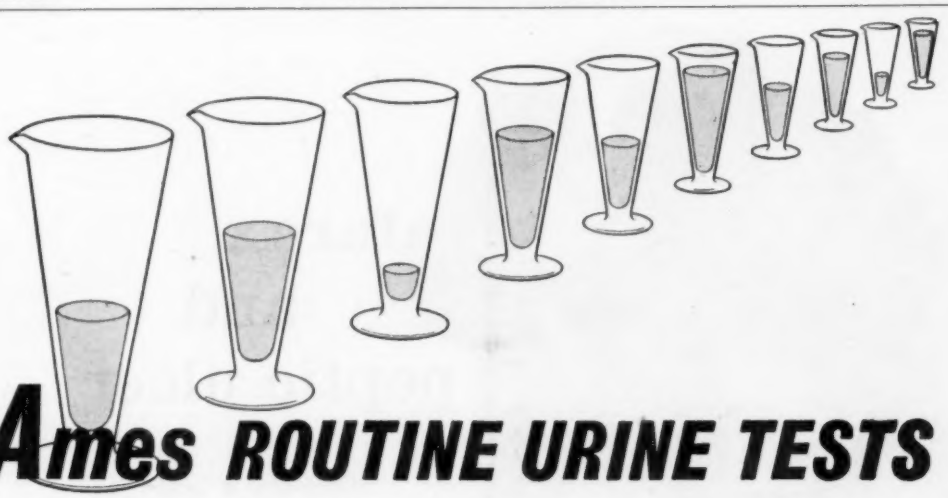


Ames ROUTINE URINE TESTS

— reliable, quick, no external heating —

A **NEW** COLOUR TEST

For **PROTEIN** ———— **ALBUSTIX*** *reagent strips*

For **BLOOD** ———— **OCCULTEST*** *reagent tablets*

For **GLUCOSE** ———— **CLINISTIX*** *reagent strips*

For **BILIRUBIN** ———— **ICTOTEST*** *reagent tablets*

For **KETONES** ———— **ACETEST*** *reagent tablets*

. . . and, of course, for reliable estimation of

SUGAR ———— **CLINITEST*** *reagent tablets*

Range of six simplified urine tests for General Practitioners, hospitals, clinics and laboratories.

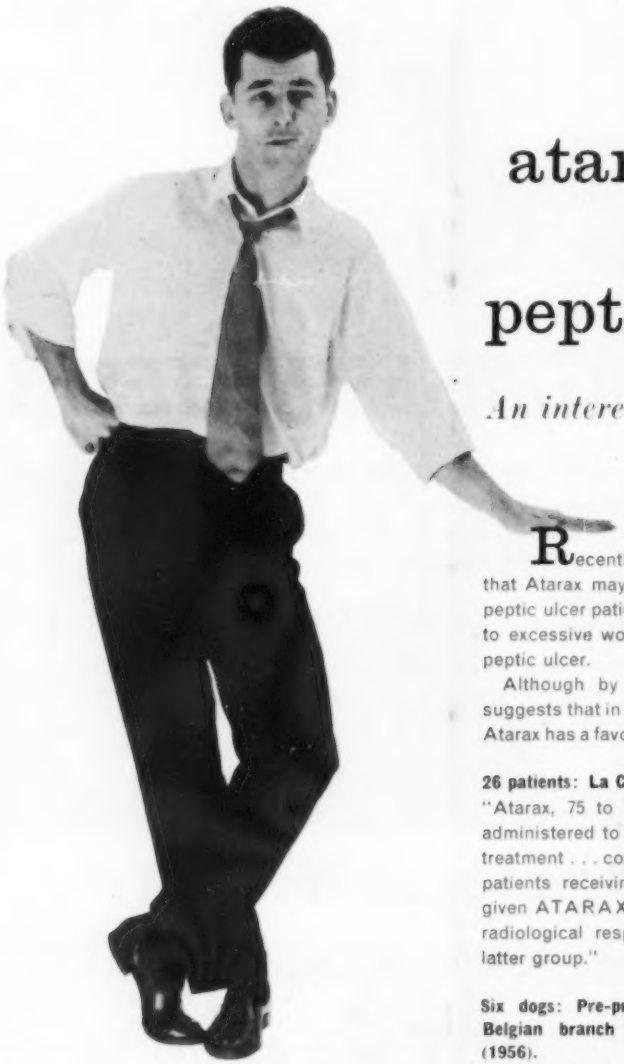
Please write for illustrated leaflet and references.

'Acetest' and 'Clinitest' are available under the N.H.S. on Form E.C.10. *(See drug tariff)*

AMES COMPANY (LONDON) **LTD.**

NUFFIELD HOUSE, PICCADILLY, LONDON, W.1 *Telephone: REGent 5321*

**Trade Marks*



atarax and peptic ulcer

An interesting suggestion

Recently published evidence has suggested that Atarax may be of value in the treatment both of peptic ulcer patients and of those whose predisposition to excessive worry might lead to the development of peptic ulcer.

Although by no means conclusive, the evidence suggests that in addition to its action in reducing worry, Atarax has a favourable effect on gastric hypersecretion.

26 patients: La Clinique (1957) 513, 473.
"Atarax, 75 to 100 mg. daily in divided doses, was administered to 26 patients together with conventional treatment . . . comparison of an earlier series of 37 ulcer patients receiving only standard therapy with those given ATARAX adjunctively revealed that clinical and radiological response was significantly better in the latter group."

Six dogs: Pre-publication communication made to the Belgian branch of the Société de Biologie, Brussels (1956).
"Small doses of hydroxyzine (Atarax) (5 mg./kg.) produce a significant reduction of the hypersecretory effect..."

25 patients: Personal communication (1957).
Tests in a series of 25 patients show that there is "a definite and distinct lowering (of both volume of secretions and of free hydrochloric acid) in the majority of patients..."

atarax*
brand of hydroxyzine

Tablets of 10 mg. and 25 mg. hydroxyzine hydrochloride in bottles of 20 and 100. Syrup containing 10 mg. hydroxyzine hydrochloride per 5 ml. in bottles of 4 fl. oz.

Pfizer

PFIZER PHARMACEUTICALS
Manufactured at Sandwich
Processed at Folkestone, Kent

* Trade Mark

153200

"Here's a health unto His Allergy!"

Sandosten Effervescent Tablets

BY **SANDOZ**

25 mg. thenalidine tartrate
0.579 g. calcium lactate
0.794 g. calcium gluconate

anti-allergic, anti-pruritic

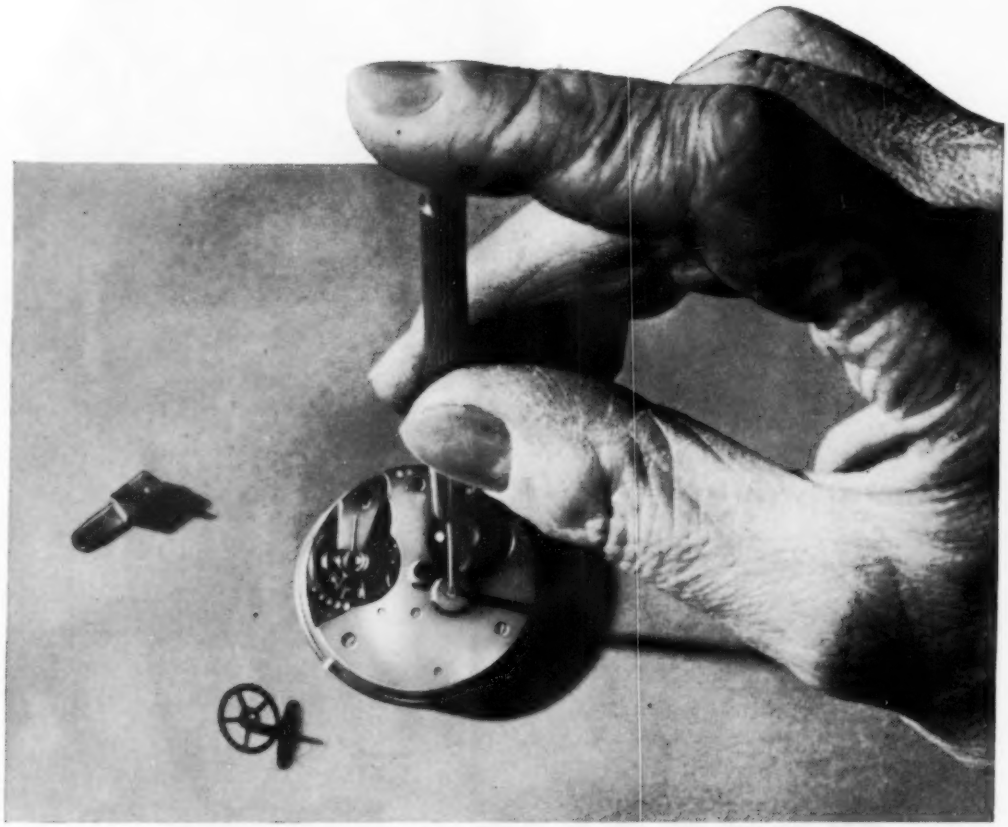
The effervescent anti-allergic drink

Samples upon request

Sandoz Products Limited

Sandoz House
23 Great Castle Street
London, W.1

This man has Parkinsonism



but he also has

ARTANE*

TRIHEXYPHENIDYL

*REGD. TRADEMARK

The classic treatment for postencephalitic, arteriosclerotic and idiopathic Parkinsonism

ELIXIR *2 mg. per 5 cc. Bottles of 16 fl. oz.*

TABLETS *2 mg. and 5 mg. Bottles of 100 and 1,000*

Lederle

CYANAMID

LEDERLE LABORATORIES DIVISION *Cyanamid* OF GREAT BRITAIN LTD., London, W.C.2

ATHLETE'S FOOT

and other superficial mycotic infections

'Glyped' Cream provides an entirely new mode of attack

'Glyped' Cream offers a new approach to the control of Athlete's Foot and other superficial dermatophytoses. It contains glyceryl triacetate, which provides effective antifungal therapy by means of a self-controlled enzyme action on the skin. Free fatty acid is released and maintained at a constant level within a pH range of the optimum therapeutic effect and this is non-irritating to the tissues even over long periods.

The clinical effectiveness of 'Glyped' Cream against a number of common dermatophytic conditions has been confirmed by workers in the Dermatological Department of the University of Wisconsin, U.S.A.*

'Glyped' Cream contains 25% glyceryl triacetate in an emollient cream base. Literature and further information are available on request.

*A.M.A. Arch. Dermatol (1956). 74. 73.

- ***NON-IRRITATING***
- ***NON-SENSITISING***
- ***ODOURLESS***
- ***INCONSPICUOUS IN USE***

'Glyped' TRADE MARK **CREAM**

Issued in 25 gramme collapsible tubes

Manufactured under licence from Wisconsin Alumni Research Foundation; patent applications pending.

Made in Great Britain by IMPERIAL CHEMICAL INDUSTRIES LIMITED Pharmaceuticals Division Wilmslow Cheshire

Ph.835

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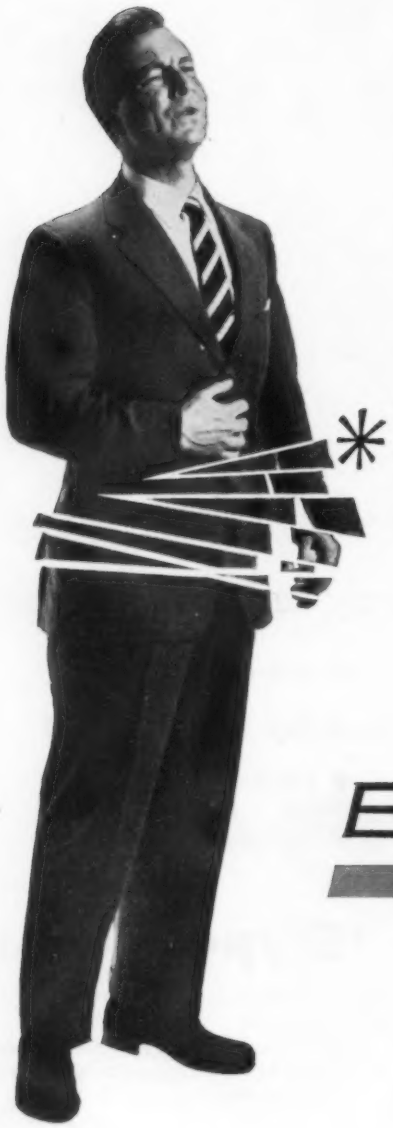


in nervous dyspepsia and smooth muscle spasm

BARDASE* with its antispasmodic, sedative and amylolytic action, presents a comprehensive therapeutic approach to the problem of visceral spasm; belladonna alkaloids to relieve spasm, phenobarbitone to relax nervous tension and Taka*-Diastase to assist starch digestion. Bardase has proved its value in the relief and management of gastro-intestinal disturbances, particularly in nervous dyspepsia. Bardase may also be a useful adjunct in the treatment of peptic ulcer and ulcerative colitis.

BARDASE

*TRADE MARK

SPASMOLYTIC SEDATIVE DIGESTIVE AID

Bardase Tablets: in bottles 50 and 500
Bardase Liquid: in bottles of 4 and 16 fl. ozs.

PARKE, DAVIS & CO. LTD. *(Inc. USA)*
Hounslow, Middlesex. Telephone Hounslow 2361
1016

COMBINED
SEDATIVE ANALGESIC

SEDUMAX

for ANXIETY, STRESS & INSOMNIA

SEDUMAX was formulated to provide the physician with an effective and innocuous therapy for patients suffering from stress, anxiety and insomnia, particularly where these symptoms are accompanied by mild pain. Carbromal and Bromvaletone were chosen because of their known value in inducing sedation in anxiety tension states. They are also non-habit forming and there is little risk of toxicity. Phenacetin was included for its sound analgesic properties, Vitamin B_1—Aneurine Hydrochloride—for its known value in the treatment of neuritis of pregnancy and the associated stress symptoms commonly experienced during gestation.

Therapeutic Effect

SEDUMAX *has the following attributes:—*

1. *Effective and innocuous sedation.* **2.** *Non-habit forming.*
3. *Relief of mild pain.* **4.** *Adaptive capacity not impaired.*
5. *Low dosage.*

In cases of emotional stress a dosage of one tablet t.d.s. brings about a reduction of tension without the patient's adaptive capacity for meeting the stresses of everyday life being affected. SEDUMAX is particularly valuable as a sedative analgesic for the relief of insomnia due to mild pain in a host of medical conditions, pre-menstrual tension and other common symptoms of stress.

Formula: Each tablet contains:
Carbromal . 120 mg.
Bromvaletone 120 mg.
Phenacetin . 180 mg.
Aneurine Hydrochloride 2 mg.

Dosage: Daytime medication: one tablet t.d.s.

For Insomnia: two tablets to be taken on retiring.

Packs of 50 and tax free dispensing packs of 300 tablets.
Basic N.H.S. Cost, 25 tablets 1/10½d.

CALMIC LIMITED · Crewe: *Crewe 3251-5*
London: *2 Mansfield Street W.1 · Langham 8038-9*

Nacton

(Compound I.S.499)

SUPPRESSES ACID SECRETION

All day and all night control of gastric acid in peptic ulcer is made possible by a dose of NACTON 3 times a day—and one at night.

NACTON selectively reduces gastric secretion by 50 to 70%, providing fundamental, long-term and specific control of hyperacidity, not merely relief of symptoms.

in peptic ulcer

EACH TABLET CONTAINS	2 mg. of (1-methyl 2-pyrrolidyl) methyl benzilate methyl methosulphate

PACKAGES & BASIC N.H.S. COST	50 tablets	4s. 4d.
	250 tablets	20s. 0d.

A PRODUCT OF BRITISH RESEARCH

1301/80/4

C. L. BENCARD LTD. PARK ROYAL, LONDON, N.W.10

have I been disappointed in this expectation... The more I saw of the great powers of this plant, the more it seemed necessary to bring the doses of it to the greatest possible accuracy. I [illegible] at this degree of accuracy was not

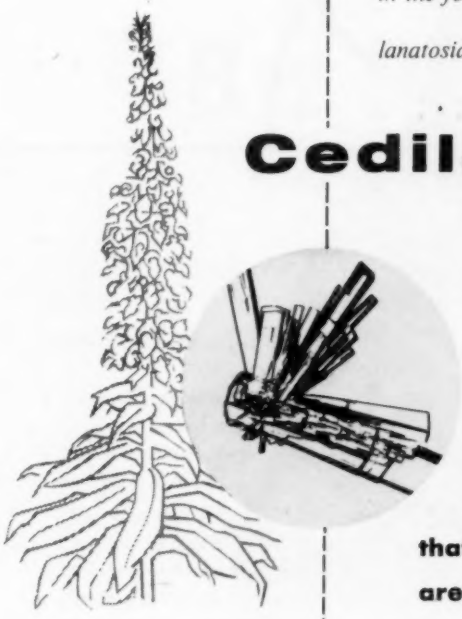
— William Withering, M.D., 1785

"The great powers of this plant"

are brought to the physician of today

in the form of the pure crystalline cardiac glycoside

lanatoside C —



Cedilanid

BY SANDOZ

combining all the classical actions of Digitalis leaf with "the greatest possible accuracy of dosage," rapid onset of therapeutic action, and rapid elimination to ensure that the effects of overdosage are short-lived.

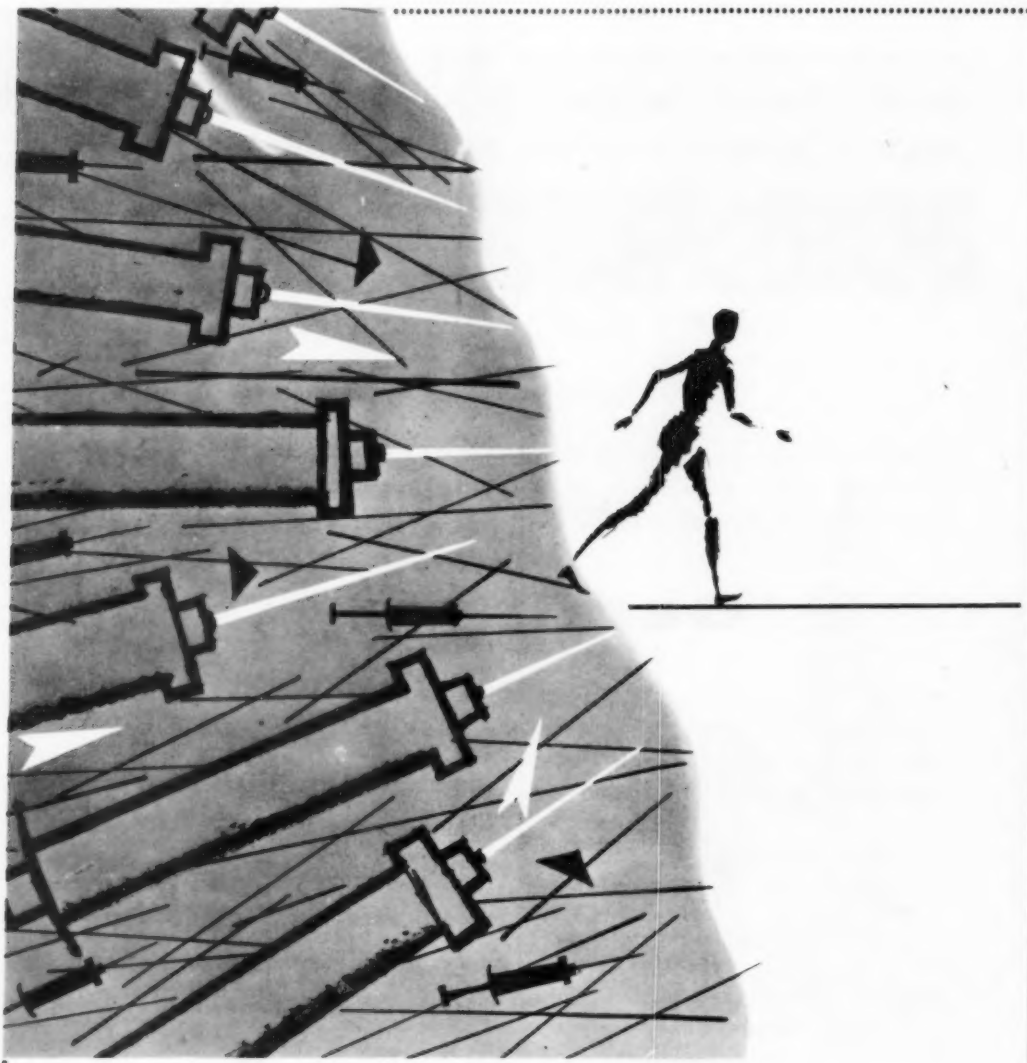
TABLETS	0.25 mg. lanatoside C
SOLUTION	1 ml. (approx. 30 drops) contains 1 mg. lanatoside C
AMPOULES	2 ml. contain 0.4 mg. desacetyl-lanatoside C

Sandoz Products Limited

Sandoz House

23 Great Castle Street

London W.1



For

AN INJECTION-FREE FUTURE IN PERNICIOUS ANAEMIA

PPH20/58

'DISTIVIT'

vitamin B12 PEPTIDE complex

AN ORIGINAL PRODUCT OF **DC(B)L** RESEARCH

- **efficiently absorbed after oral administration**
- **clinically as effective as injection of crystalline vitamin B12**
- **free from toxicity; no unpleasant taste**

'DISTIVIT' brand vitamin B12 peptide complex, backed by clinical investigation,* is an oral preparation that is efficiently absorbed and which restores the normal blood picture in pernicious anaemia as effectively and consistently as does crystalline vitamin B12 administered by the parenteral route.

'DISTIVIT' oral vitamin B12 PEPTIDE complex should not be confused with mixtures of crystalline vitamin B12 with intrinsic factor or other absorption additives.

'Distivit' 20

Each scored tablet contains 20 micrograms combined vitamin B12 in the form of a peptide complex.
Tubes of 25 and bottles of 100 tablets.

'Distivit' 100

Each tablet contains 100 micrograms of vitamin B12 in the form of a peptide complex.
Bottles of 100 and 500 tablets.

Basic cost to N.H.S. of 12 tablets from dispensing pack of 100—1s. 0½d. and 2s. 7½d. respectively.

'DISTIVIT' AN ORIGINAL PRODUCT OF DC(B)L RESEARCH

*"The Oral Treatment of Pernicious Anaemia: A New Approach." Lancet (1958), 1, 982.

THE DISTILLERS COMPANY (*Biochemicals*) LIMITED
BROADWAY HOUSE, THE BROADWAY, WIMBLEDON, LONDON S.W.19
Telephone: Liberty 6600

Owners of the trademark 'Distivit'

DECORTISYL
Prednisone

AND

PRECORTISYL
Prednisolone

Potent corticosteroids with enhanced
ANTI-INFLAMMATORY
ANTI-ALLERGIC
ANTIRHEUMATIC
activity

- Superior therapeutic effect.
- Little or no sodium and water retention.
- Often succeed when cortisone or hydrocortisone has failed, or because sodium and water retention have occurred.
- Equal and interchangeable.

ROUSSEL

LONDON, N.W.10.
LADbroke 6611

Packings: Scored tablets of 1 mg. — Bottles of 100
Scored tablets of 5 mg. — Bottles of 30, 100 and 500

22 LS/58

where antacids alone are unsatisfactory

RELIEVES SPASM

1. 'Merbentyl', an anticholinergic with virtually no belladonna-type side effects, effectively relieves the spasm. By decreasing peristalsis the antacids are enabled to exert their neutralising effect for a prolonged period.

REDUCES ACIDITY

2. Short acting magnesium oxide and long-acting dried aluminium hydroxide gel combine to provide the ideal antacid. There is no constipation or laxation.

KOLANTYL

does four good things in the relief of peptic ulceration

PROTECTS MUCOSA

3. Methylcellulose, a demulcent, is included to protect the damaged mucosa from further irritation by the gastric contents.

INHIBITS EXCESS ENZYME ACTION

4. Sodium lauryl sulphate inhibits the proteolytic enzymes lysozyme and pepsin. Excess lysozyme is frequently present in the vicinity of a peptic ulcer.

Merrell Research

'Kolantyl' is available as tablets and gel. Each tablet or 10 c.c. of gel contains:

Dried Aluminium Hydroxide Gel	400 *mg.*
Magnesium Oxide	200 *mg.*
'Merbentyl' (dicyclomine hydrochloride)	5 *mg.*
Methylcellulose	100 *mg.*
Sodium lauryl sulphate	25 *mg.*

PACKS:
Convenient rolls of 12 tablets in cartons of four or twenty rolls. 'Kolantyl' Gel in bottles of 12 fl. oz. The basic N.H.S. costs are 5s. and 23s. 4d.; of the gel, 6s. 4d. Purchase Tax additional.

DOSAGE:
2 tablets or 4 teaspoonfuls of gel three or four times daily.

'Kolantyl' and 'Merbentyl' are registered trade marks of the Wm. S. Merrell Company.

Distributed in the United Kingdom and Irish Republic by

RIKER LABORATORIES LIMITED · LOUGHBOROUGH · LEICS.

New! simple HAY FEVER treatment

PREDSOL
TRADE MARK
NASAL DROPS

produce a distinctive clinical response*

Predsol Nasal Drops are a stable, crystal-clear, *true* aqueous solution of 0.1% prednisolone phosphate, the most soluble prednisteroid. Two thousand times more soluble than hydrocortisone, or prednisolone itself, Predsol achieves the most rapid and most thorough contact with affected tissues after topical application, so producing maximum therapeutic effect.

* *Brit. Med. J.*, 1958, *1*, 969.

Gradual 3-stage relief

- Relief of nasal obstruction
- Episodic attacks become milder and shorter, then cease.
- Threshold of irritability of nasal mucosa gradually returns to normal.

Simply administered. Two drops instilled into each nostril four times a day produce a distinctive clinical response in most cases of hay fever.

Predsol Nasal Drops are issued in bottles of 10 cc.

PREDSOL the most soluble prednisteroid

GLAXO LABORATORIES LTD., GREENFORD, MIDDLESEX. BYRon 3434

Makers of ALL you need for corticoid treatment

A NORMAL ROUTINE MAINTAINED
. . . in early pregnancy
WITH
'AVOMINE'
trade mark
brand
The long acting anti-emetic
'Avomine' is supplied as tablets of 25 mg. (each containing the equivalent of about 14 mg. promethazine.)
MANUFACTURED BY
MAY & BAKER LTD

MA 4962

An M&B brand Medical Product

DISTRIBUTORS: PHARMACEUTICAL SPECIALITIES (MAY & BAKER) LTD · DAGENHAM

Most efficient oral penicillin available!

Introducing

'Icipen' V 300

TRADE MARK

POTASSIUM PENICILLIN V TABLETS

'Icipen' 300 presents penicillin V potassium salt – the most efficient oral penicillin available today. It is rapidly and reliably absorbed; therapeutic levels are attained in fifteen minutes and peak concentrations are reached within thirty minutes. Clinical results are comparable to those obtained with intramuscular penicillin G.

'Icipen' 300 is ideal for all infections due to penicillin sensitive organisms, including many conditions previously requiring injections of penicillin.

DOSAGE The adult dose of 'Icipen' 300 is one tablet three or four times a day. Each scored tablet contains the equivalent of 300 mg. penicillin V as potassium salt.

PACKINGS Containers of 12, 100 and 500 tablets.

and 'Icipen' V Suspension

TRADE MARK

A pleasantly flavoured preparation, particularly suitable for children and elderly patients. Each teaspoonful (3.5 ml.) of prepared 'Icipen' Suspension contains 150 mg. penicillin V (as calcium salt).

DOSAGE The adult dose is two teaspoonfuls three or four times a day. Children should be given proportionately less.

PACKINGS Bottles of 2 fl. oz. (when dispensed).

ICI

IMPERIAL CHEMICAL INDUSTRIES LIMITED
PHARMACEUTICALS DIVISION WILMSLOW CHESHIRE
Ph.833

'RAUWILOID'

is essential for Hypertension

'Rauwiloid', a purified and standardised fraction of Rauwolfia serpentina alkaloids, can be considered a basic treatment for hypertension. It lowers blood pressure more effectively than phenobarbitone or its combinations with theobromine and is less likely to cause depression than reserpine.

IMPORTANT

'Rauwiloid' may require more than a week for a significant anti-hypertensive effect to develop. Any previous treatment, particularly barbiturate, should be gradually reduced over this period.

In Mild to Moderate Hypertension

In most cases 'Rauwiloid' will provide adequate control by itself. Combination therapy is not necessary.

In Moderate to Severe Hypertension

When a greater hypotensive effect is required, 'Rauwiloid' should be combined with veratrum in the form of 'Rauwiloid + Veriloid'. 'Veriloid' is a biologically standardised alkaloidal extract of Veratrum viride. Such a combination with 'Rauwiloid' enables adequate doses of veratrum to be given for a satisfactory hypotensive response. (See detailed literature).

In Severe or Malignant Hypertension

'Rauwiloid' used in conjunction with ganglionic blocking agents enables a smaller dose of the more potent medicament to be used, thereby minimising side-effects and decreasing the tendency for tolerance to develop.

'Rauwiloid' is available in 2 mg. tablets in bottles of 60 and 500. Dosage, two tablets at night.

RIKER

'Rauwiloid' and 'Veriloid' are registered trade marks

Registered Users

RIKER LABORATORIES LIMITED

LOUGHBOROUGH, LEICS.

mild sedation

WITH

nutritional support

THE debilitated patient, whether recovering from severe illness or operation or suffering from a chronic disease, is greatly benefited by the addition of nutritionally generous supplements of vitamins of the B complex and ascorbic acid. Such patients often need also mild sedation.

A combination of the necessary vitamins with a relatively low dose of phenobarbitone is now available as

TROPENAL

INDICATIONS

(1) **Anxiety states with restlessness,** especially associated with hypertension, alcoholic withdrawal or peptic ulcer.

(2) **Progressive illnesses** in which insomnia is associated with a need for the greatest nutritional support—
e.g. congestive heart disease
cachectic states.

(3) **During convalescence,** to speed recovery by promoting good appetite, and a quiet frame of mind associated with nutritional adequacy.

(4) **Insomnia** not induced by pain.

FORMULA

Each tablet contains:

Aneurine hydrochloride B.P.	5 mg.
Riboflavine B.P.	5 mg.
Pyridoxine B.P.C.	2 mg.
Nicotinamide B.P.	15 mg.
Ascorbic acid B.P.	50 mg.
Phenobarbitone B.P.	16 mg. (¼ gr.)

In designing the formula, it was necessary to bear in mind the known antagonism between barbiturates and the vitamins of the B complex, together with the theoretical possibility that the effects might cancel each other out. But preliminary trials have shown that on account of the varying speeds of action and other factors not fully understood, the combination is clinically effective.

DOSAGE

One to four tablets daily.
Tablets in packs
of 25, 100 and 500.

VITAMINS LIMITED
Upper Mall, London, W.6.

NOW — a favourite prescription

in a NEW form . . .

more convenient for both patient and doctor

You can now prescribe

Bellergal Retard

1 tablet night and morning

for **continuous** control

of symptoms in a wide variety

of psychosomatic disorders

Bellergal Retard

BY **SANDOZ**

TABLETS

0.2 mg. total alkaloids of belladonna
0.6 mg. Ergotamine Tartrate B.P.
40 mg. Phenobarbitone B.P.

Sandoz Products Limited

Sandoz House
23 Great Castle Street
London, W.1

IMPROVED PHENOTHIAZINE DERIVATIVE

NEW

Easier control of psychoses, neuroses and anxiety states

Dartalan*

BRAND OF THIOPROPAZATE DIHYDROCHLORIDE

DIHYDROCHLORIDE

DARTALAN gives consistently effective results with low dosage.

DARTALAN is safe, has minimal side effects
(In specially designed studies and clinical trials in 727 patients, no liver toxicity was reported).

DARTALAN relaxes the disturbed mind, and invests the patient with a sense of well-being and normality.

* *Registered Trade Mark*

AVERAGE DOSAGE:
In the psychoses: 10 mg. three times daily
in the neuroses: 5 mg. three times daily

AVAILABILITY:
5 mg. and 10 mg. tablets in bottles of 50 and 500

SEARLE

HIGH WYCOMBE · BUCKS
High Wycombe 1770

GUANIMYCIN

- rapidly controls symptoms
- eradicates infecting organisms
- considerably shortens duration of illness
- is well tolerated by children as well as adults
- is wholly free from neurotoxic complications

GUANIMYCIN

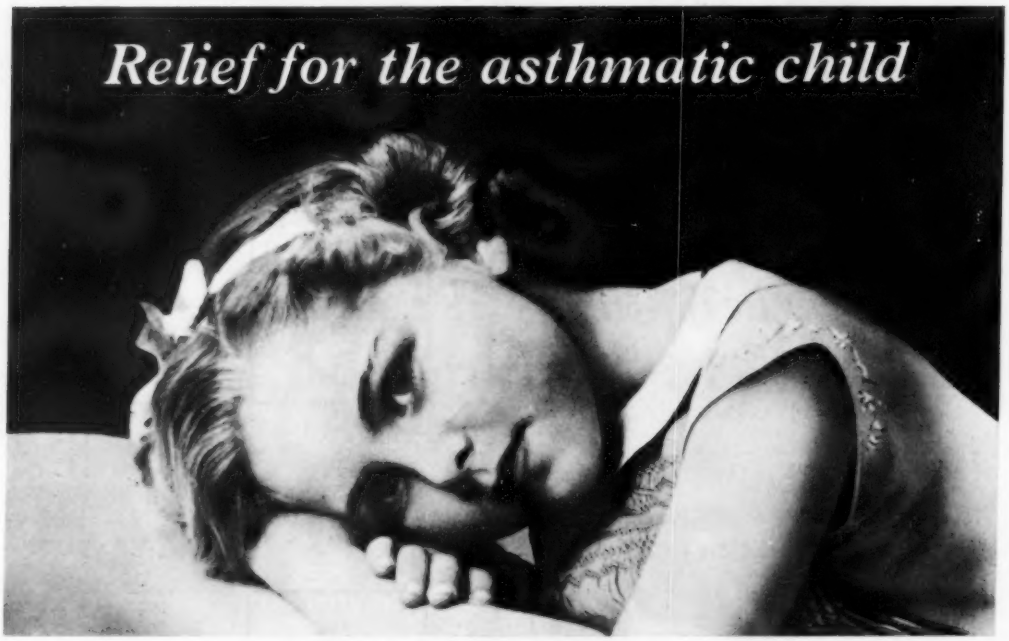
Standard Reference Card on Application

Supplied in bottles to prepare 4 fluid ounces of suspension.

When diluted to 4 fluid ounces with water, each fluid ounce contains streptomycin sulphate 0.25 g., sulphaguanidine 2 g. and kaolin 2 g.

Manufactured in England by ALLEN & HANBURYS LTD LONDON E2

N58/114-5/H



UNIQUE BUFFERED THEOPHYLLINE SYRUP

Relief from the apprehension and acute distress of an asthmatic attack is provided by 'ENGLATE.' In almost all cases gastrointestinal disturbance is entirely absent. The combination of theophylline sodium with glycine permits full and effective therapeutic activity and by reducing gastric precipitation of theophylline enables larger doses to be prescribed.

ENGLATE

Regd. Trade Mark — *Theophylline Sodium Glycinate*

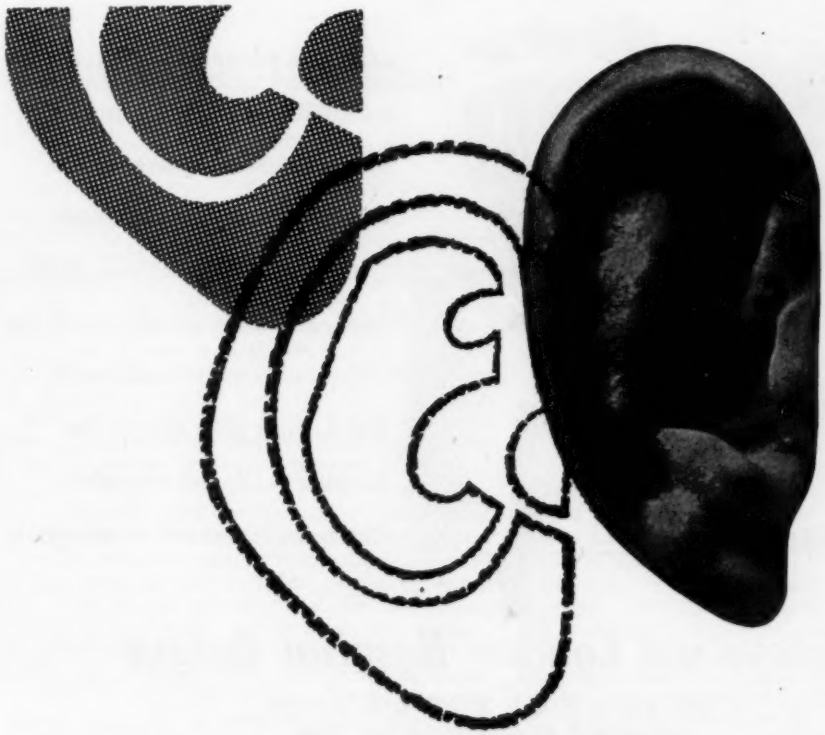
SYRUP (containing 120 mg. of theophylline sodium glycinate per 4 ml.) for children up to 12 years. Available in bottles of 8 fluid ounces.

TABLETS (300 mg. of theophylline sodium glycinate). Available in bottles of 50 and 500.

Samples and literature will gladly be sent on request

A Nicholas Product

A. & G. Nicholas LTD. *Slough, Bucks, England*



'OTOSPORIN'

clears infected ears

The modern method of treatment in otitis externa, chronic otitis media, and infected mastoid cavities, is 'Otosporin' brand Drops.

'Otosporin' is an aqueous suspension containing both neomycin (5 mgm. per c.c.) and polymyxin B sulphate (10,000 units per c.c.) which are together effective against practically all the bacteria found in ear infections. They are unlikely to induce bacterial resistance or skin sensitisation, and neither of them gives rise to cross-resistance or cross-sensitisation to penicillin and other antibiotics. Their effectiveness is visibly enhanced by the hydrocortisone (5 mgm. per c.c.) in 'Otosporin'; this, by reducing inflammation, not only relieves pain, but provides greater access for the antibiotics

'OTOSPORIN' drops
issued in bottles of 5 c.c.

BURROUGHS WELLCOME & CO. (THE WELLCOME FOUNDATION LTD.) **LONDON**

LONDON HOSPITAL CATGUT

is a British surgical catgut, sterilised by chemical methods instead of by heat. The process is unique—and renders L.H.C. more flexible and more elastic. Absorption factors are reliable. Tensile strength exceeds B.P. Standards, so that the finest gauge suited to the operation can be used with safety. This means less scar tissue and quicker healing.

always use London Hospital Catgut

the more **F·L·E·X·I·B·L·E** suture

Now packed in the non-splintering 'Spot' Tubes

Relief for Spring sufferers

Neophryn with Antihistamine Spray is designed to relieve the symptoms of hay fever and allergic rhinitis as quickly and safely as possible. Nasal congestion is cleared and local irritation reduced without rebound congestion or interference with ciliary movement. There is no C.N.S. stimulation or sedation, and the spray may be used for small children.

Neophryn

Trade Mark

with Antihistamine

l-m-hydroxy-α-methylaminomethyl benzyl alcohol HCl 0.5%, with thenyldiamine HCl 0.1%.

Basic N.H.S. cost of Nasal Spray with Antihistamine, 2/8.

Bayer Products Limited

Kingston-upon-Thames, Surrey

Associated exporting company: Winthrop Products Ltd.

BAYER

HEALTH SERVICES, PAST, PRESENT AND FUTURE *

G. E. GODBER
D.M. Oxon., F.R.C.P., D.P.H.
DEPUTY CHIEF MEDICAL OFFICER, MINISTRY OF HEALTH

IT is sometimes suggested, particularly by visitors from other countries, that the nature of the medical care available to our population changed abruptly in July, 1948. This is quite untrue, since a complete range of medical and allied services was available before the National Health Service was introduced. What that service did was to change the ways in which people could obtain and pay for the care that they needed. Broadly, they ceased to pay for medical attention at the time they required it, and instead, as taxpayers, and as contributors to national insurance, they began to subscribe collectively for the care that was needed by all those members of the community who fell ill.

Before July, 1948, there were hospital services provided partly by voluntary organisations, some of which were very ancient, and partly by local authorities whose curative and preventive services were both of relatively recent growth. There were home nurses and midwives, clinics, health visitors, ambulances, immunisation, and aftercare of the tuberculous provided by a medley of local authorities and voluntary bodies. More than half the population had a "panel doctor" under National Health Insurance, and the rest either paid for service when they obtained it, subscribed to prepayment systems, or called upon the district medical officer under Public Assistance if they had no funds. Indeed, one might almost say that the only services that were new on July 5, 1948, were the availability of specialist consultations in the patient's own home, and home helps for households in which there was illness. Even these had been present to some extent before—the first for those who could pay, and both the first and the second for mothers who were confined in their own homes.

The change that became possible in July, 1948, was not, therefore, the immediate provision of new services, but a bringing together of diverse services provided on a different scale in different areas and often in different ways by two or more agencies in the same area. Admittedly they were still to be organised through different agencies, but these were planned with the coordination of their activities in mind. It happened that the National Health Service was introduced at a time when large changes in medical practice had already begun to appear, although the health service is sometimes quite erroneously held solely responsible for some of them.

A given population had come to need more "man hours" of medical and allied time, and "medical" care of the individual was more likely than before to require the intervention of members of other professions or of other doctors as well as his own family medical adviser. In consequence hospital outpatients were already increasing and there were long waiting-lists for hospital admissions. To meet the extra demands there were more trained staff, medical and allied. In the war the hospital buildings themselves had suffered some total loss and had acquired some emergency additions, but in general they suffered seriously from the impossibility of adequate structural maintenance or improvement during the war years.

The National Health Service at its inception was thus faced with a great burden of reorganisation, but also with the opportunity of exploiting many new developments in medical and allied fields, especially in the hospitals. The immediate problems of the first few years were those of establishing the new organisation, and much longer term planning was impossible. This had some advantages because there was negligible experience of such subjects as regional hospital planning, and even basic statistical information was lacking. Moreover, there were changes in public demand which could hardly have been foreseen accurately.

General Practice

The largest single element in the health service is general medical practice. The other branches of the service are really only effective in so far as they are related to and stem from general medical practice.

The first year or two of the health service produced a greatly increased amount of medical work, the main burden of which fell upon the general practitioner.

The Social Survey estimated that the increase in calls on doctors in the first year, compared with the position before the National Health Service, was about 10% and the increase in the number of general practitioners in that first year was small. The number of general practitioners in England and Wales giving general medical service was 16,864 in 1948; and, by common consent, they were already too few.

The immediate effect of the health service was to remove any financial bar to medical care for those groups who might have been deterred by cost under the previous system, particularly mothers, children, and old people past the normal working age—precisely the people who might have been expected to need most medical care. Obviously from this there flowed certain secondary consequences. Many middle-aged women requiring gynæcological repair sought medical advice for the first time and were referred to the hospitals for treatment, increasing the load upon gynæcological departments immediately. Older people, including many with failing vision, had a new opportunity of seeking medical advice which led them in consequence to a sight test, and so to the prescription of spectacles. The deaf, for the first time, had the opportunity of obtaining efficient hearing-aids without payment; and were directed to the hospital services.

We have little exact information, but it seems a reasonable conclusion that the additional work that fell to general practice came largely from these groups, and it is rather surprising that the increase should have been no more than 10% in the first year and 17% by the third year. One study of a small group of practices suggests that subsequent changes have been seasonal and there is no consistent upward trend.

One way in which general practice could have met the additional load was, of course, by the entry of large numbers of additional doctors, but that was less easy than might appear. Although nearly half the population was not covered by National Health Insurance before the appointed day, most would be linked directly or indirectly with some practice. The establishment of a new general practice required suitable accommodation, which in the thickly populated industrial towns was not often readily available, especially during a time of housing shortage. Also, patients, except perhaps in new housing estates, did not readily change doctors in large numbers. Recruitment to partnerships seemed the best method, but in

* An address to the Northern Ireland Health Services Conference on Sept. 10, 1957.

the early months many doctors wanted to wait to see what happened.

The Medical Practices Committee gave the number of general practitioners in July, 1948, as 16,864, which probably includes some who entered just before July 5 in order to be certain of inclusion in the list; by mid-1952 the figure was 17,383, and by July, 1956, it was 19,082 with an additional 778 with limited lists and 1914 assistants—numbers which have altered little since 1948. There has been an overall increase in the doctors available for family care of over 12%, plus whatever proportion was added just prior to July, 1948, in anticipation of the service.

When the service began about half the general practitioners of England and Wales were in partnerships. Now the proportion is approaching two-thirds, and it is especially notable that, of the principals under 35, four out of five are in partnership compared with one in two of those over 55. The newcomer to general practice, therefore, seeks and enters a partnership rather than a vacancy in a single-handed practice. Competition for advertised single-handed vacancies is keen, in the South at least, but it seems likely that partnerships are sought from choice as well as from necessity. Three-quarters of these partners are in groups of two or three.

Increase in the number of general practitioners has been chiefly in the industrial centres where the average lists are higher. The distribution scheme agreed following the Danckwerts award was intended to encourage particularly the doctors with medium-sized lists, and at the same time the maximum list was reduced by one-eighth. Since then the distribution of doctors has steadily improved; almost half the population lived in relatively "under-doctored" areas in 1952, but little more than a fifth in 1956. Less than a twentieth of the population now lives in "over-doctored areas". There is still about a quarter of the population on lists of 3000 or over, but the proportion is still falling.

The process of redistribution must be gradual as it is mainly effected by selective recruitment. This process is the main method of increasing the number of general practitioners, and it must be self-limiting in the long run. Clearly there must be some limiting factor in the size of list which will give the practitioner a full and satisfying job. The average list per principal is now about 2200 and is very slowly falling.

Particular attention has been paid since the Danckwerts award to measures which may foster the development of group practice. The advantages of health centres or group practice have been considered by various committees, from the Dawson Committee in 1920 to the recent Central Health Services Council committee on general practice under the chairmanship of Lord Cohen. At the inception of the health service many looked to the introduction of health centres by local health authorities as the solution to the future of general practice. In fact, health centres have made relatively little contribution to general practice, at least in quantity; twenty-seven of them, most not for general practice, were taken over at the beginning of the service; and eight have been opened in new or converted premises since by local health authorities, two are now building, and five have been provided in other ways. A much larger contribution has been made by the voluntary provision of group-practice facilities by the doctors themselves, and since 1952 £100,000 a year has been set aside for Great Britain from the central pool for general practitioners' remuneration to provide for interest-free loans for provision or adaptation of premises. These are not group practices in the sense in which the term is used in the United States; they do not purport to provide a complete range of medical care. The British form of group practice is one of a group of family doctors who work together in shared premises, relieving each other and gaining immeasurably from the regular professional contacts between members of the group; but not attempting to undertake a full range of care extending into the hospitals. Our development of shared family-doctor responsibility in a group, each member of which has his own personal patients, but is none the less known to other patients in the practice, seems to fit in best with the other health service provision in our compact and heavily populated country.

Before the health service, radiological and pathological facilities were available free to very few general practitioners, and still fewer could provide such facilities themselves. It has been a deliberate piece of policy in the hospital section of the health service to provide open access to X-ray and pathological departments for general practitioners, and, although in the early stages many radiologists and pathologists objected on the ground that they would be vastly over-burdened, it has proved that general practitioners are not unreasonable in their calls for such service. Indeed, there is evidence that open access actually reduces the demands that might otherwise be made on laboratories. Only 8·6% of the radiological and 4·2% of the pathological work done in hospitals in 1955 was for general practitioners.

There can be little doubt that this policy of open access to diagnostic facilities is right. It is absurd to train young doctors to make their diagnoses in hospital with all the facilities available there and then withdraw those facilities at the same moment as these young men are, for the first time, faced with independent responsibility for the clinical conclusions they must reach. The older doctors, too, can hardly keep in touch with medical progress if they are denied access to procedures which are the elementary routine of clinical practice in hospital. Two of the health centres (Corby and Darbishire House in Manchester) provide diagnostic facilities for practitioners; Woodberry Down provides some pathological facilities, but not X-ray. These are really outstations of the hospital diagnostic departments, and it remains to be seen whether so thickly populated a country as ours really requires this separate provision rather than open access to hospital departments.

In maternity work also, there has been a material change in general practice. Maternity medical services have been popular with the patients themselves, and although the proportion of confinements actually attended by doctors is not large, the patients appear to want the supervision a doctor, booked to attend if necessary, can give. The Cranbrook Committee is now reviewing the organisation of the maternity services, but whatever form it takes in future, the general practitioner who has a patient on his general list must always be, to some extent, at risk of being called to attend some emergency of pregnancy, if not of parturition. Good antenatal care is vital, and the general practitioner will always have a part to play in it.

It would not be right to attempt to formulate a plan for the development of general practice centrally and then impose it. General practice is essentially an individual and personal thing between the patient and the doctor. It may be possible to facilitate such developments as the formation of group practices: it would certainly never be desirable to try and impose such a solution on unwilling doctors or patients. We have preserved general practice with its implied personal responsibilities in the health service, whereas some other countries are allowing it to

disappear and be replaced by a hotch-potch of specialisms. The function of planning is to provide outside aids to the extent that they may be desired, and to make sure that the other parts of the health service are planned for their proper supporting role; in fact to give general practice the best possible conditions for evolution.

The Local-authority Services

The preventive functions remain with the local health authorities, along with a number of other services which are essentially supporting services for general practice. These preventive services must increasingly make calls upon the general practitioner, who is the person best placed to give effective advice on the maintenance of health, including mental health. Paradoxically, he may have been given the least effective education in this field. That is a fault of medical education in the past, and one for the medical schools and the profession to remedy. It is clear that the general practitioner is the most effective ally the medical officer of health can have, and no future system of preventive and social medicine can be effective unless much of its work is done with and through the clinicians in the patient's home and in hospital. There are sometimes difficulties in using general practitioners in clinic work. They are not insurmountable, and with the growth of group practice they should be much reduced.

Home nursing is the most direct contribution made by local-health-authority services to family practice. Home-nursing facilities were, of course, available from voluntary sources before the health service came in, but they have been greatly expanded since 1938 and are now used by a much wider cross-section of families than ten years ago. Changes in medical techniques have affected the work of home nurses, a much larger part now being taken up with carrying out treatment—for instance, injections of antibiotics—directly prescribed by family doctors. Since the trend of hospital practice is toward the encouragement of home care and early discharge from hospital, the home nurse is also more frequently required to continue treatment at home. Several special schemes for home nursing of seriously ill children deserve notice.

On the other hand, domiciliary midwifery has tended to decline. The proportion of home confinements has fallen and in England and Wales has been just over one-third for the past four years. Hitherto, we have tried to maintain as large a proportion of home confinements as possible. Fifty per cent was suggested as reasonable, given adequate housing, by the Standing Maternity and Midwifery Advisory Committee five years ago. More recently the Royal College of Obstetricians has suggested 30 per cent or less, and the report of a survey of maternity services in the South Western Region reached much the same conclusion. If the proportion falls much below 30 per cent it will become increasingly difficult to maintain an efficient domiciliary midwifery service. Should it be held at some future time that seven or eight days in hospital was enough for the normal case, there would probably be a further decrease in home births. But some recent inquiries, notably a survey in Corby, suggest that more women would prefer home care if conditions for it could be improved. The report of the Cranbrook Committee will, no doubt, have much to say on this.

Health visitors at one time had little to do with family doctors; but in some places an increasingly close partnership is beginning to develop between them. Such developments are essential if health visiting is to retain its value in preventive work. Extension into the new preventive fields suggested by the 1946 Act has been much hampered by shortage of staff, but there have been some useful examples especially in mental health work and care of the aged.

The home help is one of the most notable additions to the health services. There are 35,000 home helps, whole or part-time now, and undoubtedly more could be used. Their work is invaluable, particularly with the development and encouragement of home care for the elderly. Some authorities, such as Leicester and Kent, have used them in special schemes for helping problem families, or those which would otherwise be disrupted by illness of the mother. They are an essential complement to medical and nursing services in the home.

The ambulance services make a less obvious contribution to general practice. They are a valuable mechanical service and paradoxically make an important contribution in facilitating home care by making outpatient investigation and treatment possible. They have grown; they have been subject to some abuse, but they do form an essential mechanical link between home care and hospital services.

Hospital Services

The hospital service is the most expensive, the most monumental, and too often the most lauded part of the health service. It is sometimes said that the hospital is the focal point of the health service, but this always seems to me an inversion of the facts. The hospitals and specialists are an essentially supporting service. The function of the hospital is only to provide specialist advice and such treatment as cannot be given at home. It is true that lives which can be saved by treatment are mostly saved in hospital wards; but the opportunity of doing that depends primarily on the vigilance of the family doctor, who selects the patients needing special care. It follows from this that the diagnostic facilities and the outpatient department are, in many ways, the most important part of the hospital service. They would, of course, be helpless in many cases without beds for patients needing special care, but roughly half the admissions to general-hospital beds come through the outpatient departments. It is not generally appreciated that the greater part of medical admissions are " emergency " and the surgical specialties which deal mainly in elective surgery provide the waiting-lists. The majority of medical outpatients are sent for advice on diagnosis and perhaps for the initiation of treatment, whereas more than half the new surgical outpatients require admission to the wards.

It is generally recognised that a large increase in outpatient service had occurred before 1948. Roughly 6·9 million new outpatients attended the hospitals of England and Wales in 1956. That would represent 2 out of every 13 of the population if there were no duplication through patients attending more than one department (as many do). As against this, over 3·7 million, or roughly 1 in 12 of the population, were admitted to the wards.

There have been substantial changes even during the nine years the hospital service has been in operation. Between 1949 and 1956 new outpatients increased by roughly 12%. In the same period new inpatients increased by no less than 27% and the population by some 4%. On the other hand, the beds in hospitals have increased by only about 1·5% and the number of beds

staffed and available by approximately 6%. It is clear that there has been a considerable change in the way in which our hospitals are actually used.

Looking back for a moment at the hospitals we took over, there were some 3000 of them, the most modern being a sanatorium completed in 1944; the most modern general hospital in England was opened in 1940. The only entirely new hospital opened since that date is a dental teaching hospital at Sheffield. Most of the hospitals, general or special, have at least parts of their buildings dating back to the last century, and many of them were in use for hospital purposes over a century and a half ago. Moreover, the earlier development of hospital services had led to the multiplication of small special units and often to the close proximity of two or more general hospitals competing uneconomically in providing similar services. Nowhere had there been the opportunity to provide an area specialist service planned to meet efficiently the needs of the population as a whole. The first great contribution of the health service towards ending this chaos was to group the hospitals in patterns which were determined primarily by the needs of a comprehensive area service, except where some large special unit, usually a mental hospital, made it necessary to create a separate management committee. Given so many of these old buildings, many of which had been grievously lacking even in necessary structural maintenance work for nearly ten years, it was impossible to contemplate providing within a short time the necessary physical resources in buildings and plant. These separate units, planned for the requirements of many years ago, complicated endlessly the performance of modern hospital functions. Bad old buildings do not make good work impossible; but they make it much more difficult and extravagant in time at all levels and they greatly complicate technical problems such as the preservation of asepsis in surgery, so that breakdown must sometimes occur however careful staff may be. A hospital so designed that every member of the staff walks even only a dozen steps unnecessarily in every hour imposes material extra work on the people who work in it, and most of our hospitals demand much more than that.

Manifestly, this state of affairs could not have been corrected by now, however large a share of the national capital development had been allowed to hospitals. But a hospital service depends primarily on the people who work in it and only secondarily on physical structure; and it has been possible, therefore, to make large changes in the quantity and quality of service without new building. The pattern of staffing in hospitals outside the main teaching centres before 1948 was determined not so much by the requirements of the population as by the amount of private work in various specialties from which specialists could derive an income while they did their work free in voluntary hospitals. Some local-authority hospital services, particularly those of Middlesex, Surrey, London, Birmingham, and some of the other larger cities, had developed specialist services of their own, but in very few places had there been coordination of these services with those of the voluntary hospitals, where most of the acute work was commonly done. The immediate contribution of the health service, therefore, was to make possible reorganisation of staff, and since mid-1948 the number of consultants has grown by something like 45%. Here again, exact figures are not available. We only have those for the period from December, 1949, to December, 1956, and in that period consultants increased by one-third. These additional specialists mainly went to the areas where there was little or no specialist staffing before, with the result that everyone in England and Wales now lives within reach of a hospital with a fully trained specialist staff.

Similarly, junior medical staff has increased by more than a fifth and there has been a substantial increase in the number of both trained and student nurses. Hospitals therefore are much more nearly fully staffed than before the health service came in, and to this advance must be given some at least of the credit for the large increase in turnover. The improvement has been not merely one of quantity. Highly specialised units—for instance, thoracic surgery, neurosurgery, plastic surgery, and radiotherapy—have been developed so that they also are within reach of everyone.

There were, of course, many potential consultants with experience during the war in the Services and subsequent training in the civilian hospitals. Some of the war-time developments—for instance, in pathology, blood-transfusion, mass radiography, and bacteriology—already provided the basis for further growth. It was possible to expand some of the specialties fairly rapidly, notably general medicine, general surgery, pathology (thanks to the late Sir Philip Panton's work), traumatic and orthopædic surgery, and anæsthetics; but in others there were fewer suitable trained men or less readiness to seek training, and in such fields as psychiatry and radiology the deficiency was too great to be met soon. Very early in the service it became apparent that there were too many aspirants coming forward for the likely available posts, especially in general medicine, surgery, obstetrics, and orthopædics, and it was soon necessary to limit the number of senior registrars; but again there was insufficient information about the probable needs of individual specialties, and there are still too many aspirants in these four large specialties, and in such specialties as plastic surgery, neurosurgery, and thoracic surgery. That situation is gradually being brought under control by allowing the demand for trained men to determine the intake of trainees, but these are favourite specialties for the good young doctor, and too many still seek their future in them with the result that the individual is disappointed and the other specialties are deprived of some first-class recruits.

Hospitals are commonly described in terms of the number of beds they contain, and in former times these figures would have given some estimate of the work that was done; but that is no longer true. A hospital is primarily a diagnostic and treatment centre at which some of the patients must stay. It is at least as necessary to be sure that there are sufficient outpatient space, sufficient pathological and radiological facilities, and adequate provision for surgical operations as that there are enough beds. Beds can be used in different ways and at varying speeds. In North America, for instance, they are used at a good deal more rapid rate than here. There are large differences between different types of hospitals here; in 1955 the numbers of admissions per general medical bed in non-teaching, London teaching, and provincial teaching hospitals were respectively 14·6, 14·6, and 19·2, and per general surgical bed 24·1, 22·5, and 26·1. There are 9·7 beds per 1000 of the population in the United States, and to those beds 124 admissions per 1000 of the population are made per year. The corresponding figures in this

country are 11·6 beds per 1000, but only some 80 admissions per 1000 per year. The only fully documented and detailed studies of bed requirements in this country, those of the Nuffield Trust, suggest that we have more beds than we need for our present turnover. Certainly we need nothing like the 14 beds per 1000 that were suggested in the memorandum on development of consultant services, nor the 8 or so non-mental beds per 1000 suggested in some of the hospital surveys of 1943–44.

Modern development is toward putting the acute psychiatric unit and the acute geriatric unit in the general hospital, and beds provided for one purpose should be so arranged that they can be equally well used for another; most of our current new planning at a rate of some 3 beds per 1000 has a reasonable margin. It is vital, however, to avoid cramping the outpatient and diagnostic departments and operating-theatres. These are the real key departments; beds are secondary to them and can be far more easily and economically increased if they are really proved necessary by experience. Whatever new hospital development is planned there should be space for addition.

Development is, therefore, likely to be on the lines of replacement of multiple, small, bad, old hospitals by larger, well-planned, modern hospital units in smaller numbers and in many areas with fewer beds in all. We then face the problem of how far this process of concentration should be carried. There are various limiting factors in this. It is commonly accepted in Britain that hospitals should not be too large. The service in a city of the size of Sheffield, for instance, serving 600,000–700,000 persons, should not be concentrated in one central group of buildings. British thinking is against what amounts to a hospital town, a unit so large as to be cut off from the community of which it is or should be a part and drawing patients too far from their own localities. So far as the big cities are concerned, opinion in England favours the main area general hospital of the order of at most 600 beds, perhaps with associated special facilities including an acute psychiatric unit and facilities for the care of the chronic sick, and sometimes a small number of detached units—for instance, a long-stay annexe or a maternity unit. Such a hospital is large enough to provide adequate specialist units in all the ordinary specialties. It is easy to devise a pattern for one of our cities, say, Liverpool with a central teaching hospital of larger size and an inner and outer ring of general hospitals, each of 600 beds or so, disposed at suitable points of confluence of public transport for the convenience of the public. Obviously this sort of pattern will not be reached for many years because it involves replacement of most of the existing hospitals. It must be flexible because succeeding generations will certainly want to vary it, in detail if not in essentials, but any new building now could be arranged to fit in with such a plan without throwing away effort on patching or extending unsuitable old hospitals.

Outside the big cities the needs of substantial county towns are relatively clear. A single general hospital, perhaps with some detached annexes for long-stay cases, can provide ultimately all the hospital service that is needed. The mistake that can be made is that long-term planning can be distorted by a mistaken desire to conserve unsatisfactory pieces of old hospitals which will never fit efficiently into a new unit; or, worse still, several separate hospitals, each too small, may be preserved.

Elsewhere much more difficult considerations arise. Broadly, public transport determines the foci at which hospitals should be developed. People should be able to get to their hospitals as they are able to get to towns for other purposes. The special problems arise where, as in West Cornwall, there is a multiplicity of small towns each with its own small hospital. In such places ultimately the small units must give way to a central general hospital which will be an adequate base for the development of specialist services. The right place is largely determined by the integration of bus and rail services. The most satisfactory population grouping is of the order of 100,000 upward, with an upper limit around a quarter of a million. Local considerations of transport, site location, and past practice must come into these decisions, for a uniform pattern supposedly ideal would inevitably be stultifying.

There are some population groups which are so detached as to make necessary hospital provision on a smaller scale than would normally be considered. Places like Berwick and Aberystwyth are very far from any main centre and serve populations too small to support the general hospital of 250 beds or so which would normally be regarded as a minimum. Geography makes it necessary to have such detached units, but they should be at least large enough to provide work for locally resident physician, surgeon, and obstetrician and visiting specialists in other fields. The general hospital with no locally resident specialist staff is an anachronism.

We must guard against the vanity of too firm, remote planning, until there is some experience with modern area hospitals. There is insufficient basic information, and however clear may be theoretical concepts developed at the centre they must often be modified in the light of local knowledge and feeling. The problem is to avoid a sentimental dispersal of effort which would too greatly reduce the effectiveness of the hospitals we provide. No attempt has been made to discuss the general-practitioner cottage hospital because, although we have many such, their use varies greatly and no clear pattern for their future can be discerned. There are too many serious lacunæ in the provision for specialties to contemplate much new development otherwise, except in giving general practitioners access to beds especially for maternity cases.

Infectious disease is a declining problem both in and out of hospital. Separate hospitals for these diseases can have no place in future planning unless it be in the largest cities, and even there I doubt whether they will survive long. Tuberculosis is by no means conquered yet, but the mortality has fallen by two-thirds and morbidity by more than a quarter; already many beds for tuberculosis are redundant and more become so yearly. The day of the separate sanatorium is probably short, and treatment of tuberculosis within the foreseeable future will probably be undertaken largely in special wards of general hospitals. In turn, there will be a reduction in the demand for thoracic surgical facilities for tuberculosis while there has arisen a new problem in cancer of the lung, which is certain to grow for some years to come. Yet this disease presents a smaller problem than tuberculosis in the demand it will make upon hospital beds, for it is either extirpated by surgery or it is much more rapidly progressive than tuberculosis. Cardiac surgery has increased rapidly and will remain with us, but probably not to produce any great further increase in the load. Special units for neurosurgery and plastic surgery probably need material further increase, but they in turn will reduce the load on general and traumatic surgery. Pædiatric departments grew rapidly in the early years of the service, but that growth has passed its peak five years ago and it is doubtful whether we will continue to need so many beds as we have now; in areas such as London, Manchester, and Liverpool a pronounced decline has occurred and the total pædiatric admissions, starting at 91,205

in 1949, rose to a maximum of 121,208 in 1952 and fell to just over 100,000 in 1956. Other special departments, such as genito-urinary surgery, will probably grow, but if they do it will be at the expense of general surgical facilities which they replace in part.

Early ambulation after surgery and shorter stay will reduce the number of surgical beds required for the same number of patients, but the surgical waiting-lists are so long and are falling so slowly that more facilities are needed. Even with more operating-theatres and appreciably faster turnover, it may well be that the present requirement will remain and some territorial redistribution will certainly be needed. On the other hand, medical beds are far less heavily pressed, although in some areas they are manifestly too few. Between these two main specialties much geater flexibility is needed, freeing beds for medical cases in the first three months of the year, when respiratory illness is at its height, and returning them for surgical work in later months of the year.

Probably the most striking changes will occur in the use of beds for the mentally ill. In the past five years there has been a rapid increase in the provision of treatment for the mentally ill outside hospital, and the probable development of the future is in psychiatric units at general hospitals rather than in large numbers of beds in detached mental hospitals. New psychiatric outpatients, other than those seen for mental deficiency, doubled in number between 1954 and 1956, probably because of an increase not so much in illness as in readiness to accept early treatment. The separate mental hospital will be with us for many years yet, but it is likely that new provision will be mainly at general hospitals with inpatient, day-hospital, and outpatient facilities. Experience in some of the psychiatric units of general hospitals in the Manchester region and elsewhere suggests that, in this way, a much smaller number of beds can provide for a given population than has been thought necessary in the past.

Much of this comment on the hospital service is by way of forecasting trends. The precedents show that most forecasters have been wide of the mark. I pretend to do no more than mark some trends already discernible which seem to me most likely to survive. There remains the major issue. I said at the beginning that the health service was primarily one of home care. If that is so, the hospitals must be organised primarily for the support of home care. They are consultative centres for special diagnosis and treatment, but they must be more than that. They are not the centres of general practice, but they must be accessible to the general practitioner. In some hospitals there is already clearly realisation of the necessity of closer liaison between special and general medical practice. As specialism becomes more complicated and more abstruse, this association becomes more than ever necessary. The family doctor is the only person who sees the patient whole in relation to his family and his job, as well as to his illness. It is necessary, therefore, that the family doctor should not merely have diagnostic aids from the hospital but also be enabled to make his own peculiar contribution to the assessment and care of the patient who goes to hospital, both when he is there and when he has returned home. The sojourn in hospital is a brief incident in the patient's life, in a foreign environment; it may have a continuing effect. It is important that that effect should be as favourable as medicine as a whole can devise, but that is only practicable if there is close partnership between those inside and those outside hospital, whatever their profession.

PHARMACOLOGY AND CLINICAL USE OF PEMPIDINE IN THE TREATMENT OF HYPERTENSION

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BEFORE the introduction of mecamylamine, all effective ganglion-blocking drugs used in the therapy of hypertension were quaternary ammonium derivatives. These drugs are not freely diffusible across cell membranes, including those of the gastrointestinal tract (Paton and Zaimis 1952). Since their absorption from the gut is slow, incomplete, and unpredictable, oral therapy is difficult to control and often ineffective. In contrast, mecamylamine is a secondary amine which is freely and rapidly absorbed from the gut (Milne et al. 1957), and is therefore always given by mouth.

Although mecamylamine has become very popular in the treatment of hypertension, it has several disadvantages.

Since its excretion is slow and irregular (Allanby and Trounce 1957, Milne et al. 1957) toxic effects from overdosage may be prolonged for several days, sometimes with danger to life. Of these effects, paralytic ileus is the most important. Resultant vomiting and diarrhœa cause reduction of renal blood-flow with further delay in excretion of the drug and prolongation of toxic effects. Patients with mecamylamine ileus have been diagnosed by unsuspecting surgeons as cases of acute intestinal obstruction, and exposed to the danger of unnecessary laparotomy (Grant and Boyd 1957, personal observation 1958). Mecamylamine diffuses freely into the central nervous system, and accumulation within the brain may lead to tremors and incoordination (Schneckloth et al. 1956, Harington and Kincaid-Smith 1958).

In view of these disadvantages, we were glad to study another drug of the amine, ganglion-blocking type, preliminary laboratory findings of which were submitted to us in October, 1957, by Messrs. May & Baker Ltd. For this new drug (1 : 2 : 2 : 6 : 6-pentamethylpiperidine) originally designated M & B 4486, the common name pempidine ('Perolysen', May & Baker) has been proposed. While closely resembling mecamylamine, it has important differences in detail which may make it a more useful antihypertensive agent. It will be necessary throughout to compare the pharmacology of these superficially similar drugs. Supplies of pempidine were made available to us on Jan. 1, 1958, together with detailed pharmacological, biological, and toxicological data (S. J. Corne and N. D. Edge, personal communication), now published in summary form (Lee et al. 1958). An independent report on the basic pharmacology of pempidine and other piperidine derivatives has also been published recently (Spinks and Young 1958).

Chemistry

Pempidine, a tertiary amine, is a simple derivative of piperidine of empirical formula $C_{10}H_{21}N$, and molecular weight 155. Fig. 1 shows the structural formulæ of pempidine and mecamylamine. Both compounds are relatively strong bases of pK_a about 11·0, and are therefore administered as salts. Pempidine is available for oral use as the bitartrate, but the hydrochloride

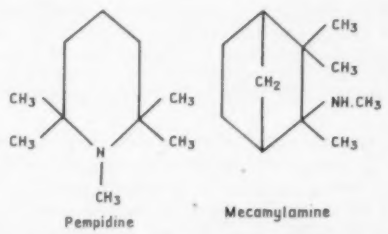

Fig. 1—Structural formulæ of pempidine and mecamylamine. In both instances the amine radicle is surrounded by numerous methyl groups.

is preferred for the intravenous route. Since the drug is freely absorbed from the gut, the parenteral preparation is chiefly of research interest and will have little place in practical therapeutics. The hydrochloride contains about 80% of active pempidine base, and the bitartrate about 50%. The drug has pharmacological and chemical properties quite distinct from those of the much more toxic unsubstituted amines, piperidine and N-methylpiperidine. This is of theoretical interest in relation to the mode of action of the amine ganglion-blocking group of drugs. Other piperidine derivatives have previously been shown to have ganglion-blocking activity (Norton and Phillips 1953), but pempidine is the first to be suitable for use in human therapeutics.

Pharmacology

The experimental design was similar to that used in an investigation of mecamylamine (Milne et al. 1957). The results obtained in the two series of observations can thus be directly compared.

Observations in Man

32 hypertensive patients without renal failure were given pempidine, and of these 27 received continuous treatment. In addition, observations were made in 2 cases of hypertension complicated by moderate uræmia (blood-urea approximately 100 mg. per 100 ml.).

Observations were made of the excretion of a single 5 mg. dose of pempidine hydrochloride given by intravenous injection at 9 A.M. Since it is known that the excretion of mecamylamine is considerably influenced by variation of urinary pH (Baer et al. 1956, Milne et al. 1957), the separate effects of simultaneous administration of ammonium chloride, sodium bicarbonate, or acetazolamide on the excretion and pharmacological action of pempidine were studied in detail. Ammonium chloride, 2 g. four times daily or sodium bicarbonate 3 g. four times daily, was given by mouth on the day preceding and the day of

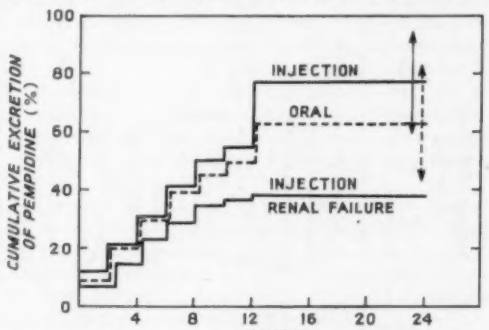

Fig. 2—Mean cumulative excretion of pempidine during the first 24 hours after an intravenous injection or an oral dose of the drug in hypertensive patients without renal failure, and after an intravenous injection in patients with renal failure. The standard deviations of the 24-hour excretion levels are shown by the vertical lines.

injection of pempidine. During trials with acetazolamide, 250 mg. was given orally at the same time as the pempidine injection and a further 250 mg. six hours later. Urine was collected at two-hourly intervals for twelve hours after administration of pempidine, and a further twelve-hour sample from 9 P.M. to 9 A.M. was collected to complete a twenty-four-hour period. In the cases of renal failure, additional twenty-four-hour samples were obtained on the second and third days after the injection. Each first-day collection period therefore involved analysis of 8 urine samples, 7 after the injection and 1 pre-injection blank sample. 32 collection periods have been analysed, comprising 8 from patients after pempidine alone, 8 from patients receiving additional ammonium chloride, 8 from patients receiving either sodium bicarbonate or acetazolamide, 2 from cases of moderate renal failure, and 6 from patients receiving a single oral dose of pempidine, ranging from 5 to 15 mg. of the bitartrate.

A total of 90 daily collections of urine from 10 hypertensive patients on continuous routine treatment with pempidine bitartrate were analysed. The effects of ammonium chloride, 2 g. q.i.d. for three days, and sodium bicarbonate 3 g. q.i.d. for three days, on excretion and antihypertensive action were examined.

Distribution of the drug in human blood in vivo could not be determined, because the analytical methods were too insensitive. Distribution of pempidine in vitro was determined after addition of pure pempidine hydrochloride to blood sufficient to give an average concentration of 25 μg. per ml. Plasma-protein binding was determined after pressure filtration through 'Cellophane', and entry of the drug into erythrocytes after centrifuging. Entry of pempidine into leucocytes was investigated in a sample of blood from a case of chronic lymphatic leukæmia with a white-cell count of about 300,000 per c.mm.

TABLE I—STATISTICAL ANALYSIS OF EXCRETION OF PEMPIDINE IN MAN, AND COMPARISON WITH THE EXCRETION OF MECAMYLAMINE

Comparison	Mean I	Mean II	t value	P
Excretion of injected dose (I) *v.* excretion of oral dose (II)	76%	63%	1·2	0·3>P>0·2
Excretion in acid urine (I) *v.* excretion in alkaline urine (II)	78%	55%	2·2	<0·05
Excretion pempidine in acid urine (I) *v.* excretion mecamylamine in acid urine (II)	78%	56%	2·9	<0·02
Excretion pempidine in normal urine (I) *v.* excretion mecamylamine in normal urine (II)	76%	37%	6·7	<0·001
Excretion pempidine in alkaline urine (I) *v.* excretion mecamylamine in alkaline urine (II)	55%	13%	6·0	<0·001

Observations in Rats

These experiments were designed to investigate the distribution of the drug in various body tissues. 2 rats were given sub-lethal intraperitoneal injections of 16 mg. per kg. body-weight of pempidine base and a further 2 rats lethal intraperitoneal injections of 175 mg. per kg. Samples of blood and various tissues were analysed after one hour in the former and immediately before death in the latter. Rats die in respiratory paralysis twenty to twenty-five minutes after lethal injection of the drug.

Chemical Methods

Pempidine was estimated by combination with methyl-orange as first described by Brodie and Udenfriend (1945) and modified by Tillson et al. (1954). A full discussion of this accurate but non-specific method has been given previously (Milne et al. 1957). Tests for specificity in the particular experimental conditions were made by paper chromatography after extraction of urine samples by dichlorethane. The chromatogram was developed either by butanol-acetic acid or phenol-water, and the position of the pempidine spot demonstrated by the method of Chargaff et al. (1948). The only spot from urine samples which gave a methyl-orange reaction after elution had an R_f value identical with pure pempidine (R_f in butanol-acetic

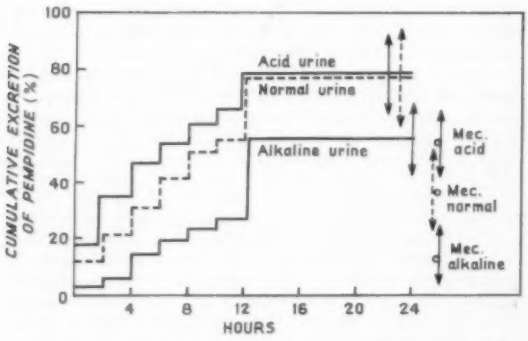

Fig. 3—Mean cumulative excretion of pempidine during the first 24 hours after a single intravenous injection of 5 mg. of the hydrochloride in hypertensive patients without renal failure. Excretion rates are decreased in patients with alkaline urine and slightly increased in patients with highly acid urine. The vertical lines give the standard deviation in each case. Cumulative excretion of mecamylamine in 24 hours is shown for comparison. The lowest rate of excretion of pempidine in alkaline urine is similar to the highest rate of excretion of mecamylamine in acid urine.

acid 0·72). This proves that pempidine is probably excreted unchanged but does not absolutely exclude the possibility of partial metabolism to another amine of identical chromatographic properties. Pure specimens of pempidine can be recovered from urine of patients treated with the drug by addition of sodium hydroxide and subsequent extraction with dichlorethane.

Results

Fig. 2 compares the cumulative excretion of pempidine after intravenous or oral administration in hypertensive patients, and the excretion after intravenous injection in 2 cases of renal failure. An average of 76% of an injected dose and 63% of an oral dose was excreted in the first twenty-four hours. This difference is not statistically significant (table I). In the uræmic patients the mean cumulative excretion was 37% of the dose in the first day, and 62% in the first two days. These results suggest that pempidine is completely absorbed from the gut, and that its elimination is delayed if there is renal failure.

Fig. 3 compares the cumulative excretion of pempidine in patients without prior preparation, and patients receiving ammonium chloride, sodium bicarbonate, or acetazolamide. The latter two agents had identical effects in reducing excretion and therefore the results have been taken together.

Excretion of pempidine is considerably reduced by alkalinisation of the urine ($P<0.05$; table I). Acidification of the urine increases excretion in the first few hours after injection of pempidine, but the total cumulative excretion in twenty-four hours is not significantly changed. Cumulative excretion of mecamylamine under identical conditions is included in fig. 3 for purposes of comparison. Pempidine excretion is about twice as rapid as that of mecamylamine in patients with urine of normal pH; four times as rapid if the urine is alkaline; and one and a half times if the urine is acid. Table I shows that these differences are all statistically significant.

The average recovery of pempidine from twenty-four-hour urine specimens obtained from patients on continuous therapy was 95% of the ingested dose (S.D. 28%). The effect of varying the pH of the urine was studied in 6 patients only. Ammonium chloride had little effect in 5 patients on the excretion of pempidine or on the clinical effects of the drug. In 1 patient excretion was approximately doubled on the first day of ammonium chloride, accompanied by a slight rise of blood-pressure. Sodium bicarbonate had a more obvious effect. Excretion of penpidine was reduced in 4 out of the 6 patients, with a parallel increase in therapeutic and side-effects due to the drug. The minimum twenty-four-hour recovery of pempidine in these four patients during sodium bicarbonate treatment was 23%, 39%, 52%, and 59% respectively. An example of the effect of alkalinisation of the urine in 1 of these patients is shown in fig. 4.

These results suggest that the drug is almost entirely excreted in the urine. Acidification and alkalinisation of the urine during maintenance treatment had less effect in the case of pempidine than in that of mecamylamine (Milne et al. 1957).

Distribution in Blood

Plasma levels during therapy were consistently low, being less than 0·5 μg. per ml. At these levels the analytical method is too insensitive to give accurate results. The drug is not significantly bound to plasma-protein, concentrations in ultrafiltrates of plasma being slightly higher than those of the plasma itself. In contrast, 25% of mecamylamine is bound to plasma-protein. Pempidine readily diffuses into erythrocytes, the mean erythrocyte/plasma ratio in human blood being 1·05. Like mecamylamine, pempidine is concentrated within leucocytes, the leucocyte/plasma concentration ratio in the specimen of leukæmic blood being 12·0.

Distribution in Tissues

Mean concentrations of pempidine in various rat tissues after sublethal and lethal intraperitoneal injections are given in table II. The drug resembles mecamylamine in tissue distribution. It is concentrated in tissues rich in nuclear material, especially the kidney, spleen, liver, and lung. Tissue/plasma concentration ratios are lower in the case of pempidine than of mecamylamine, showing that there is less tissue affinity for the former drug. This partly explains the more rapid excretion of pempidine, since a greater fraction of any given dose remains within the extracellular space and is therefore available for excretion. The $L.D._{50}$ of pempidine is considerably higher than that of mecamylamine; the $L.D._{50}$ of pempidine by intraperi-

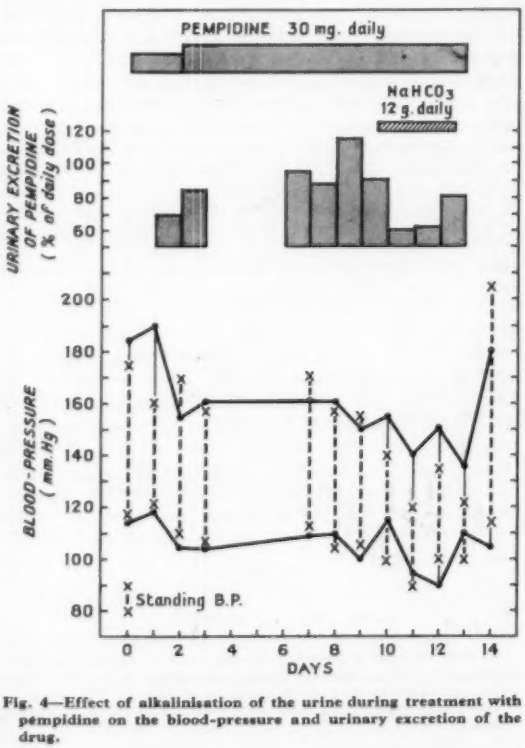

Fig. 4—Effect of alkalinisation of the urine during treatment with pempidine on the blood-pressure and urinary excretion of the drug.

TABLE II—TISSUE CONCENTRATIONS OF PEMPIDINE AND MECAMYLAMINE AFTER SUBLETHAL AND LETHAL INTRAPERITONEAL INJECTIONS IN RATS

Organ concerned	Pempidine		Mecamylamine	
	Concentration mg. per kg. wet tissue	Tissue/plasma concentration ratio	Concentration mg. per kg. wet tissue	Tissue/plasma concentration ratio
Sublethal injections *				
Brain	34·5	4·9	44	7·9
Heart	53	7·4	49	8·8
Liver	55	7·7	84	15·0
Lung	88	12·4	164	29·4
Kidney	113	16·0	117	21·0
Voluntary muscle	14	2·0	19	3·4
Spleen	108	15·2	118	21·2
Plasma	7·1	—	5·6	—
Erythrocytes	6·0	0·85	5·4	0·95
Lethal injections†				
Brain	66	1·02	40	1·8
Heart	106	1·64	82	3·8
Liver	236	3·5	90	4·0
Lung	220	3·4	150	6·8
Kidney	453	7·0	120	5·4
Voluntary muscle	78	1·2	37	1·7
Spleen	530	8·1	260	12·0
Plasma	65	—	22	—
Erythrocytes	70	1·03	22	1·15

* Sublethal injections (one hour after injection of drug, 16 mg. free base per kg. body-weight).
† Lethal injections (immediately before death after injection of mecamylamine, 60 mg. base per kg. body-weight, and pempidine 175 mg. base per kg.).

toneal injection is 175 mg. per kg. body-weight of active base, the corresponding L.D.$_{50}$ of mecamylamine is 44 mg. per kg. (Stone et al. 1956). This higher lethal dose is confirmed by the greater concentrations of pempidine in all tissue after lethal injections of the drugs (table II). Concentrations in voluntary muscle and plasma are particularly important since muscle makes up about 33% of the body-weight and extracellular fluid about 20%. Concentration of pempidine at death was 2·1 times that of mecamylamine in muscle and 3·0 times that in plasma. Both drugs readily cross the blood-brain barrier and are found in relatively high concentration in the central nervous system. The pharmacological effects of lethal doses of pempidine in rats are similar to those previously described for mecamylamine (Milne et al. 1957) and include tremor and convulsions.

Clinical Effects

Intravenous Dosage

21 patients were studied after single intravenous doses of pempidine. In all except 2 cases the drug was given in a dose of 5 mg. hydrochloride (4 mg. base). After intravenous injection, given with the patient lying flat with the head on two pillows, the onset of action was rapid, a fall in blood-pressure being noted within two minutes in most cases. The rapidity of onset of action was comparable with that after intravenous injection of pentolinium (fig. 5). In some cases no fall in blood-pressure occurred in the recumbent position, but in all except 1, postural hypotension was present on standing ten to fifteen minutes after the dose. In this case the patient did not respond to an intravenous dose of 5 mg., but a later oral dose of 20 mg. produced a prolonged hypotensive effect.

The duration of effect of a single intravenous dose, as judged by the presence of postural hypotension, was from two to six hours in patients with normal renal function. The length of this period was not consistently altered in 11 patients whose urine had been made either acid or alkaline before administration of the drug.

Oral Dosage

Single oral doses of 5–20 mg. bitartrate (2·5–10 mg. pempidine base) were given to 9 patients. After an oral dose a hypotensive effect was usually observed within an hour, although in 2 cases the onset of action was delayed for three to four hours. The total duration of hypotensive action was for six to seven hours after the dose, although the maximal effect lasted for only one to three hours.

In 2 cases after an intravenous dose, and in 3 after a large oral dose, there was a severe fall in blood-pressure, and the effect of the drug was prolonged for as long as twenty-four to thirty-six hours. One of these patients had severe oliguria which undoubtedly interfered with excretion of the drug.

Continuous Oral Treatment

27 patients have been observed on continuous treatment with pempidine. Initially the drug was administered thrice daily, but it was found that when the interval between doses was as long as eight hours, the blood-pressure tended to rise again two to three hours before the next dose. Accordingly, it is now our practice to give the drug four times during the day, the doses being spaced at five-hourly intervals from 7 A.M. to 10 P.M. On this regime a sustained blood-pressure reduction may be obtained throughout the day. If necessary the last dose at night has been doubled, thus giving a prolonged action during the night hours.

In patients with impairment of renal function the drug need be given less frequently. In 2 patients, with blood-urea levels of 80–100 mg. per 100 ml., twice-daily dosage was sufficient to maintain a steady blood-pressure reduction.

Type of Case Treated

Of the 27 patients who received continuous treatment with pempidine, 8 had malignant hypertension, with grade-IV fundi (Wagener and Keith 1939); 9 were classified in grade III, and 10 in grade II. There were 10 males and 17 females, and their ages ranged from 30 to 66. 5 patients had renal hypertension of varying ætiology, and 22 were diagnosed as essential hypertension.

Duration of Treatment

In 24 patients treatment has been continued up to the time of writing for a period varying from two to twenty weeks (average ten weeks). Treatment was stopped after a short period in 3 patients: in 1 case because of the presence of severe cerebrovascular disease; in 1, a school-teacher, because of blurring of vision which interfered with her work; and in 1 because of persistence of head-

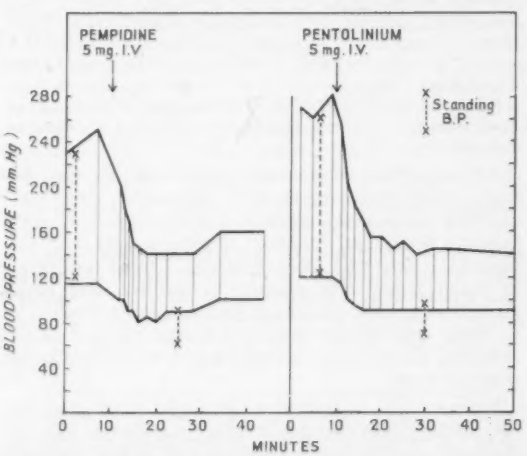

Fig. 5—Effect of an intravenous dose of pempidine, compared with that of pentolinium, in a female, aged 53, with malignant essential hypertension.

aches for which treatment had been instituted but which were not relieved by the drug.

Dosage

The dosage of pempidine required to produce an adequate hypotensive effect varied widely, a dose of 2.5 mg. twice daily sufficing in one patient, whereas as much as 25 mg. four times daily has been given in another case with only partial control of blood-pressure. This latter patient is also refractory to other ganglion-blocking drugs. The average total daily dose given as maintenance treatment in this series was 32·5 mg. bitartrate (16 mg. pempidine base).

Treatment was usually started with a dose of 2·5 mg. q.i.d. It was found that the dose could be raised rapidly, increasing each dose by 2·5 mg. daily until a satisfactory reduction in blood-pressure was achieved. Because of the rapid elimination of the drug from the body, it is therefore possible to reach a stable therapeutic dose level with reasonable safety in a few days—a procedure which would be fraught with danger in the case of mecamylamine.

Tolerance

In the limited period of study, no evidence has been seen of the development of " tolerance " to pempidine, analogous to that seen with hexamethonium and other quaternary ammonium compounds. In this respect the drug resembles mecamylamine.

Combination with Other Drugs

In 6 patients reserpine was added to the regime of treatment, and in 3 others a combination of chlorothiazide and reserpine was used in addition to pempidine. Preliminary observations suggest that these compounds potentiate the action of pempidine, as has been described with other hypotensive drugs.

Side-effects

The majority of patients in whom treatment with pempidine was maintained experienced some side-effects from the drug, the symptoms being similar to those usually observed during treatment with ganglion-blocking agents.

The side-effects ran parallel with the hypotensive action of the drug, coming on about half an hour after an oral dose, being at their maximum for one to two hours, and often wearing off before the next dose was due. Constipation was seen most frequently, in 18 out of 27 patients, together with dryness of the mouth (18) and blurring of vision (12). These symptoms were usually only mild or of moderate severity; in 3 patients, however, they were severe enough to be a major cause of complaint. Other symptoms were noted in a few patients, as follows: drowsiness (3), feeling of weakness (2), difficulty in micturition (2), diarrhœa (2), faintness (2), and a feeling of shakiness (1).

All side-effects disappeared rapidly on omitting the drug. This was particularly noticeable with constipation. 3 patients developed a syndrome of early paralytic ileus, with vomiting, abdominal pain, and distension; in each case these symptoms cleared completely in twelve hours after stopping pempidine. This is in marked contrast to experience with mecamylamine where a similar complication may take several days to clear—reflecting the relatively slow elimination of mecamylamine from the body.

Patients taking pempidine are instructed to try to ensure, with aperients if necessary, a bowel action before the first dose of the day. If constipation persists in spite of these measures, they are advised to omit one or two doses of the drug; a normal bowel action then occurs, and the drug is resumed in the previous dosage.

TABLE III—COMPARISON OF DOSAGE AND CLINICAL EFFECTS OF PEMPIDINE AND MECAMYLAMINE

Case	Pempidine			Mecamylamine		
	Daily dose (mg. free base)	B.P. control	Side-effects	Daily dose (mg. free base)	B.P. control	Side-effects
1	20	Good	+	32	Good	+
2	45	Good	+ +	56	Good	+
3	10	Good	0	8	Good	0
4	10	Good	0	24	Fair	+ +
5	15	Good	±	36	Fair	+
6	17·5	Poor	+ +	64	Poor	+
7	50	Poor	+	48	Poor	+

B.P. = blood-pressure.

Comparison with Mecamylamine in Patients treated with Both Drugs

7 of the patients treated with pempidine had previously been receiving mecamylamine for at least twelve months, so that a direct comparison of the dosage and clinical effects of the two drugs was possible in these cases (table III). The dose of pempidine, expressed as the free base, which was effective in controlling blood-pressure was smaller (average 60%) than that of mecamylamine. There was little to choose between the two drugs in respect of side-effects, which were more prominent with pempidine in 2 patients, and in 2 with mecamylamine.

Discussion

Pempidine is similar in many respects to mecamylamine. Both drugs are rapidly and completely absorbed from the gut. They readily cross cell membranes and are concentrated within tissues by intracellular protein-binding, especially to nucleoproteins. The excretion of both drugs is influenced by urinary pH, clearance being decreased in alkaline and slightly increased in acid urine. This type of excretion depends on diffusion across the renal tubular cell membranes and has recently been reviewed by Milne et al. (1958).

There are, however, important differences in detail which may make pempidine a more useful antihypertensive agent than mecamylamine. While 25% of mecamylamine is bound to plasma-protein, pempidine is not so bound, and therefore all the drug in plasma is pharmacologically active. Pempidine is excreted more rapidly than mecamylamine. This is partly due to lower tissue affinity for pempidine, and partly to higher clearance-rates of pempidine as compared with mecamylamine in alkaline or weakly acid urine (Scribner et al. 1958). More rapid excretion is advantageous because toxic accumulation of the drug in the body is less likely. In addition, the dosage of pempidine can safely be increased to effective levels more rapidly than mecamylamine. Although the excretion of both drugs is influenced by change in urinary pH, variation in mecamylamine excretion is greater than that of pempidine. The hypotensive effect of pempidine is therefore less variable despite changes in acid-base balance.

The $L.D._{50}$ of pempidine in mice is three to four times higher than that of mecamylamine (Corne and Edge, personal communication; Spinks and Young 1958). The effective dosage of pempidine in hypertension in man is usually lower than that of mecamylamine. There is probably therefore a greater margin between an effective therapeutic and a toxic dose in the case of pempidine. These preliminary results make it probable that any observed pempidine toxicity will be both less severe and briefer than that complicating mecamylamine therapy. Much longer experience will be necessary before the relative value of the two drugs in actual clinical practice can be finally established.

TABLE IV—COMPARISON OF THE CHEMICAL PROPERTIES OF PEMPIDINE AND MECAMYLAMINE WITH THOSE OF CLOSELY RELATED AMINES

Reactions of Secondary Amines

Chemical reaction	Piperidine	2 : 2 : 6 : 6-tetramethyl-piperidine	Mecamylamine
Reaction with carbon bisulphide and ammoniacal copper sulphate to form brown copper salts of dithiocarbamic acids.	Strong Immediate	Weak Very slow	Weak Slow
Reaction with 1 : 2-naphthoquinone - 4 - sulphonic acid to form indophenol dyes.	Strong Immediate	Nil	Nil
Reaction with sodium nitroprusside and acetaldehyde.	Strong Immediate	Very weak Very slow	Weak Slow

Reactions of Tertiary Amines

Chemical reaction	N-methyl-piperidine	Pempidine	N-methyl-mecamylamine
Reaction with citric acid and acetic anhydride.	Strong Rapid	Moderate Slow	Weak Slow

In its chemical properties, pempidine resembles mecamylamine more than the structurally more closely related amines, piperidine and N-methylpiperidine (table IV). It is seen that the secondary amines 2 : 2 : 6 : 6-tetramethylpiperidine and mecamylamine, and the tertiary amines pempidine and dimethylaminoisocamphane (N-methylmecamylamine) are much less chemically reactive than piperidine and N-methylpiperidine. These two amines are pressor agents (Von Euler 1945, Lockett 1949), and are much more toxic than the ganglion-blocking amines. In both pempidine and mecamylamine the potentially reactive amine nitrogen is surrounded by inactive methyl groups (fig. 1), which reduce its chemical reactivity by steric hindrance. The ganglion-blocking amines are excreted by a diffusion mechanism, indicating that the unionised component is freely diffusible across cell membranes (Milne et al. 1958). Piperidine and N-methylpiperidine are not excreted by a similar mechanism, because their molecules contain fewer non-polar groupings, and are therefore more water-soluble and less diffusible. These unsubstituted amines are partially broken down in the body with splitting of the ring adjacent to the reactive nitrogen atom (Steudel 1932, Williams 1947). The addition of four methyl radicles in proximity to the nitrogen atom in pempidine appears to inhibit metabolic breakdown, and by addition of non-polar groupings makes the unionised component freely diffusible like mecamylamine.

Pempidine and mecamylamine are therefore amines which are relatively chemically inert, and show close resemblances in the physicochemical properties of almost identical pK_a and free diffusibility across cell membranes. It will be of great theoretical interest to compare future ganglion-blocking drugs of the amine type. Bennett et al. (1957) have shown that the pharmacological actions of mecamylamine are completely different from those of the quaternary ganglion-blocking group. Pempidine will presumably resemble mecamylamine in these respects.

Summary

A recently introduced ganglion-blocking drug, pempidine, is effective in the therapy of hypertension in man.

It has many points of similarity to mecamylamine. Both are freely absorbed from the gut, as a result of which a constant therapeutic effect from day to day can be obtained with oral administration. Both are excreted more rapidly in acid than alkaline urine, are concentrated in tissue containing a high proportion of cell nuclei, and easily cross the blood-brain barrier.

Several differences in detail make pempidine a potentially more useful drug than mecamylamine. The excretion of pempidine is more rapid, chiefly because of a lower tissue affinity for the drug. Excretion of pempidine is less affected by variation in acid-base balance than that of mecamylamine. The difference between an effective and a toxic concentration is probably greater in the case of pempidine.

A steady hypotensive effect can be maintained throughout the day when pempidine is given orally at five-hourly intervals. The dosage of pempidine can be quickly increased, owing to the rapid elimination of the drug.

The chemical and physicochemical properties of pempidine and of mecamylamine in relation to their ganglion-blocking action are discussed.

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INFLUENZAL ENCEPHALOPATHY AND POSTINFLUENZAL ENCEPHALITIS

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CASES have recently been described (Dubowitz 1958, McGill and Goodbody 1958, Compton Smith 1958, Dunbar et al. 1958) of encephalitis, both fatal and non-fatal, associated with attacks of influenza-like illness and occurring at a time when Asian influenza was prevalent.

The last time that a virus antigenically similar to A/Singapore/57 caused an epidemic was in the winter of 1889–90: according to Mulder and Masurel (1958), pooled sera from people born before that date neutralise Asian influenza-virus hæmagglutinin, whereas sera taken before the 1957 epidemic from younger persons do not.

(Clarke et al. (1958) and Henle et al. (1958) have reservations about this). Accordingly we looked through some of the German and English medical journals for 1890 (the *Deutsche medizinische Wochenschrift*, *Virchows Archiv*, the *British Medical Journal*, and *The Lancet*) to see whether there was any mention of acute encephalitis associated with, or as a sequel to, clinical influenza; but we found no such case recorded, though Crome (1954) had earlier noted three reports of it in the German literature of 1892. In more recent years, however, some authors have described an association between clinical influenza and either encephalitis or the Guillain-Barré syndrome. In most cases laboratory confirmation of influenza-virus infection, either by isolation or by serological methods, was lacking.

Greenfield (1930) described two cases of encephalitis. Holmes (1947) described six cases of atypical pneumonia, of which two were associated with polyneuritis, three with lymphocytic meningitis, and one with encephalitis. Hollander (1947) reported twenty-three cases of sensory polyneuritis, of which seventeen had an influenza-like illness 1–3 weeks before onset, and two had congestion of the fauces. Leigh (1946) described nine cases of encephalitis, myelitis, or polyneuritis occurring during an epidemic of influenza B. More recently, cases with serological evidence of influenza A have been reported by Jennings (1952), who reported two cases of severe polyneuritis and a case of lymphocytic meningitis following attacks of influenza A. Ferraro and Roizin (1957) have published a useful general review of postinfective encephalitis, and Crome (1954) gives a good review of the older literature on encephalitis associated with influenza.

We have collected a number of cases where influenza-virus infection has been associated with neurological disturbance of various kinds. Most occurred during the autumn epidemic, but a few occurred early this year. These fell into four groups:

Group 1.—Fatal cases with a history of convulsions or fits or clinical " encephalitis " at the height of an attack of influenza, associated with a very congested brain at necropsy. The diagnosis was confirmed by isolation of Asian-type virus from the lungs, and in one case from the brain as well. When the illness had lasted 6 or 7 days, complement fixation to a titre of 1 : 8–1 : 16 could usually be got with influenza-A soluble antigen and postmortem serum. Attempts to isolate virus from the lungs failed in one case: but the naked-eye and histological appearance of the lungs was typical of influenza, and the necropsy was carried out more than twenty-four hours after death.

Group 2.—A history of encephalitis with onset from 3 days to 2 weeks after an attack of influenza. In its most dramatic form this presented as confusion proceeding to coma, with flaccid limbs and little or no response to stimuli. Diagnosis was made by demonstration of a high complement-fixing titre (a rise from 1 : 64 to 1 : 128 being found in one case) or by the presence, after recovery, of antibodies inhibiting hæmagglutination by Asian influenza virus, or both.

Group 3.—Cases presenting with ascending sensory and motor disturbance of the Guillain-Barré type.

Group 4.—Misleading cases.

Laboratory Investigations

Sera were put up at a dilution of 1 : 4 against heated poliomyelitis-virus antigens (types 1, 2, and 3) and at a dilution of 1 : 8 against mumps soluble and viral antigens, influenza A, B, and C soluble antigens, psittacosis-group antigen, Q-fever antigen, and adenovirus antigen.

For the hæmagglutination-inhibition test sera were treated with trypsin according to the method of Sampaio and Isaacs (1953) to destroy non-specific inhibitor. Sera inhibiting 50% hæmagglutination of 1% human group-0 cells by four agglutinating doses to an initial dilution of 1 : 16 or greater were regarded as affording evidence of past infection.

Brain suspensions, 20% in saline solution, were made of a pool of pieces taken from cortex, white matter, basal ganglia, cerebellum, and medulla. Brain and fæcal suspensions were inoculated into cultures of human-embryo liver-cells; the HuLi line established by Westwood et al. (1957) was used; its sensitivity to polioviruses and adenoviruses is very similar to that of HeLa cells. It is not susceptible to ECHO virus type 9. Brain and fæces from our most recent case was inoculated also into their MK 1 line of rhesus kidney-cells, which are readily susceptible to ECHO viruses.

Influenza virus was isolated from 10–20% lung and/or trachea suspensions in saline-broth in 12–13-day-old eggs by the amniotic route in the usual way. Where the morbid anatomical appearances strongly suggested influenza, egg cultures were usually positive where necropsy was done within 24 hours of death, and usually negative after that time; but on one occasion influenza virus was isolated about 44 hours after death.

Histological preparations were made of some pieces of brain, but most of the material is still undergoing the lengthy neuropathological embedding.

Illustrative Case-reports

One case-history typical of each group will be given in detail; significant aberrations from this pattern will be mentioned where necessary.

GROUP 1

Six patients, aged $3^1/_2$, 4, 11, 12, 30, and 44; two children were siblings.

Case 1.—A boy, aged 11. Developed influenza in September, 1957. He vomited copiously 4 days later and he became delirious the following day. On admission to Little Bromwich Hospital 6 days after the onset he was stuporous, with cerebral irritability and a mild left facial paresis: tendon-reflexes were brisker than normal, and both plantar responses were extensor. A clinical diagnosis of influenzal encephalitis was made. His cerebrospinal fluid (C.S.F.) contained less than 1 cell per c.mm.; protein was 10 mg. per 100 ml., and chloride 770 mg. He rapidly became comatose and died the day after admission.

Postmortem Findings.—At necropsy 44 hours after death (the body having been refrigerated) the trachea showed acute inflammation, with a little thin pus within the lumen. The lungs showed patchy consolidation, with only a few areas of hæmorrhage. The brain appeared soft, swollen, and friable, with intense congestion of the surface vessels. On section, the vessels of the white matter were found to be dilated, but there were no macroscopic hæmorrhages. Influenza virus of the Asian type was isolated from a tracheal swab, though not from brain or lung. Tissue cultures inoculated with suspensions of fæces and brain remained healthy.

The two youngest patients presented with convulsions as the only cerebral complication. From the one aged $3^1/_2$, influenza virus was isolated both from the brain suspension and from a pool of lung and trachea; but the brain suspension yielded no virus when diluted 1 : 10, whereas virus grew in 4/4 eggs inoculated with a dilution of 1 : 1000 (the highest dilution tested) of the lung and trachea suspension. It is not unreasonable to suspect that the pieces of brain may have been contaminated with virus in the postmortem room, because no precautions were taken to prevent this; or there may well have been virus present in the blood-stream. Histological examination of a few blocks revealed no gross changes in the brains from any of these cases; no perivascular infiltration with

inflammatory cells was noted. Detailed histological studies are being done but are not yet ready.

GROUP 2

Four patients, aged 2, 7, 10, and 46.

Case 2.—A man, aged 46, employed in a chocolate factory, was admitted on Oct. 2, 1957. 4 days before admission he had had "flu"; he went back to work 2 days later. On the day of admission he became increasingly mentally peculiar. By 10 P.M. that day he was comatose but would grasp at objects put into his hands with a peculiar coarse tremor. Next day he was deeply comatose, not responding to stimuli, and having a succession of fits. His C.S.F. contained 188 cells per c.mm., (130 erythrocytes, 45 lymphocytes, and 13 polymorphs); protein was 111 mg. per 100 ml., sugar 72 mg., and chloride 670 mg. There were no localising physical signs. His temperature was unstable, fluctuating up to 104·8°F. He was treated with paraldehyde and corticotrophin, and with streptomycin as for tuberculous meningitis. His temperature fell on the 3rd day after admission, and he looked much better. 2 days later he was conscious again; the day after that a red rash, almost varicelliform, appeared on his back across his shoulders but not elsewhere. It had disappeared 2 days later, when he was almost normal mentally though he still seemed a bit dazed. On Oct. 11 his C.S.F. contained protein 42 mg. per 100 ml., no globulin, 6 lymphocytes, 1 polymorphonuclear leucocyte, and 107 erythrocytes per c.mm. A Lange test showed 1,1,1,1,0,0,0,0,0,0. He made a complete recovery.

Complement-fixation tests against influenza-A antigen gave titres of 1 : 64 and 1 : 64+ on sera taken 2 days after admission and 14 days later. The C.S.F. was inoculated into eggs and tissue cultures of HuLi cells; no virus was isolated. Complement-fixation tests for the other antigens and the Paul-Bunnell test were negative. Fæces were unfortunately not available in the acute stage.

At least three of these patients showed instability of the temperature-regulating mechanism. One child, aged 2, recovered very slowly and was left with some residual spasticity. All were treated in the acute state with corticosteroids of one kind or another, and all but one recovered rapidly.

GROUP 3

Two males—one aged 2 years 8 months, the other aged 39. The onset was 11 days and 7 days respectively after an attack of clinical influenza.

Case 3.—The boy was admitted to the Children's Hospital on Oct. 21 with 3 days' history of malaise and constipation, 2 days' history of crying at night. On admission all his reflexes were found diminished; Kernig's sign was positive; the back, but not the neck, was stiff. A white cell count showed 15,400 per c.mm. (polymorphs 54%). His C.S.F. contained 50 cells per c.mm. (lymphocytes 90%), sugar 82 mg. per 100 ml., and protein 260 mg. No virus was isolated from the fæces. Complement fixation for poliomyelitis was negative on two samples of serum taken 10 days apart; both gave a positive complement fixation for influenza-A soluble antigen at 1 : 32+. Paralysis spread upwards from below. Partial respiratory paralysis was treated by positive-pressure respiration; treatment with corticoids was associated with recovery of movement from above downwards. The child made a complete recovery with no residual paralysis. At no time was there detectable sensory impairment.

Case 4.—A radio engineer, aged 39, had "flu" early in October and returned to work 4 days after the onset. 3 days later he felt tired and developed weakness of his legs and difficulty in walking and micturition. 2 weeks later he noticed weakness in his arms, and he was admitted to hospital on Oct. 14. He was now febrile and had no reflexes or power of movement in his legs; his arms were weak, and he showed some nystagmus. His C.S.F. contained 200 erythrocytes and 200 leucocytes (lymphocytes 80%), protein was 445 mg. per 100 ml., sugar 51 mg., and chloride 654 mg. Pandy ++, Lange 0,0,0,1,2,2,2,1,0,0. His hæmoglobin was 95%, and the white-cell count 19,000 per c.mm. (polymorphs 87%). There was no sensation to pinprick below T.3, and no sensation to touch below T.6. Lung expansion was poor, only the diaphragm working.

Next day respiration became weaker; a tracheotomy was done, and he was placed in a respirator. His eye movements became limited, bilateral facial weakness appeared, and his tongue was protruded to the left. Cortisone therapy was started and maintained for 4 weeks. 10 days later the cranial nerves were normal and arm movement improved. Over the next few days his breathing improved and he was independent of the respirator for long periods. His left ankle and knee jerks returned, and his plantar responses became extensor. A severe bedsore, however, persisted, and after 6 weeks in hospital he became ill and died 2 days later of bronchopneumonia.

Sera taken on admission and 14 days later both gave a complement-fixation titre of 1 : 32 for influenza A. Egg and tissue cultures inoculated with C.S.F. and throat washings yielded no virus. The cortisone treatment may well have prevented a rise in the complement-fixation titre after admission.

Postmortem Findings.—Patchy bronchopneumonic consolidation was found in both lungs. The brain was fixed whole. Histologically, perivascular demyelination was found; it was greatest in the cord, areas of demyelination being so extensive as to become confluent. In the medulla the lesions were not so extensive, but one confluent area of demyelination almost surrounded one olivary nucleus. Lesions were numerous in the cerebellar peduncles, especially in the middle peduncle, and were also found in the white matter near the lateral wall of the ventricle near the hippocampus major. Fat-filled macrophages were seen in and around the perivascular spaces. All the lesions appeared to be at about the same stage.

This clinical history and the histological findings resemble closely Greenfield's (1930) second case.

GROUP 4

This group comprises cases presenting with a history of an influenza-like illness followed, after an interval of a few days, by neurological illness, and where complement-fixation tests or hæmagglutination-inhibition tests, or both, for influenza remained persistently negative; and cases where the diagnosis of influenza was in doubt, or where some possible cause other than influenza was discovered. There were six such patients, aged 3, 5, 6, 32, 50, and 50.

Case 5.—A boy, aged 5, had headache, abdominal pain, lassitude and drowsiness a week before admission. His mother noticed that he had some muscular stiffness. On admission on Nov. 11, 1957, his temperature was 99·4°F and his pulse-rate 120. He was apathetic, with generalised muscular rigidity. His plantar reflexes became extensor but reverted to normal 5 days later. His C.S.F. contained 9 leucocytes per c.mm. and a slight increase in protein. The muscular rigidity gradually subsided, and the boy went home.

No virus was isolated from C.S.F. or fæces, but the complement-fixation titre for influenza rose from 1 : 64 on serum taken soon after admission to 1 : 128 on convalescent sera. However, poliovirus type 1 was isolated from the fæces of his cousin, aged 6, who was admitted the following day, also with 3 days' history of drowsiness, abdominal pain, and headache. No paralysis developed, and he was discharged on Dec. 2, in good condition. Complement-fixation titres against influenza A were the same as for his cousin. Influenza virus was not grown from throat swabs in either case. The complement-fixation test against poliovirus heated antigen remained negative.

Acute hæmorrhagic leucoencephalitis was found in only one patient post mortem. Serum was unfortunately not

taken before death or at necropsy, and no virus was isolated from lungs, central nervous system or fæces, but a respiratory infection was suggested by the following case:

Case 6.—A woman, aged 33, complained of cough, general malaise, and tiredness a week before admission. The day before admission she vomited and could not sleep at night. On the day of admission (Nov. 5, 1957) she complained of weakness of her right arm and leg and subsequently became incontinent and stuporous. Her temperature was 101°F, and she was having frequent convulsions. All her tendon-jerks were exaggerated; her plantar responses was extensor, and she had bilateral ankle clonus. Lumbar puncture yielded hazy C.S.F. containing 1000 polymorphs and 30 lymphocytes per c.mm., protein 228 mg. per 100 ml., sugar 51 mg., and chloride 760 mg. Convulsions persisted next day, and she died that afternoon. At necropsy her brain was swollen and congested. On section very many small petechial hæmorrhages were found involving the white matter of the cerebral hemispheres almost exclusively, though the brain-stem on the right side showed similar lesions. Histologically "ring hæmorrhages", with much perivascular infiltration with many polymorphs and some lymphocytes, were found. Acute tracheitis was present and the trachea contained pus; but the lungs histologically showed no gross abnormality—certainly nothing to support a diagnosis of epidemic influenza. Influenza virus was not isolated from brain or lung, and no cytopathogenic virus was isolated in tissue culture from brain, lung, or fæces.

It is possible, but by no means certain, that this was a case of influenza-virus infection; if so, the lungs returned to histological normality remarkably rapidly. It seems more likely that the tracheitis was due to something other than Asian influenza.

The next case presented a similar history but the patient recovered completely.

Case 7.—A man, aged 50, complained of shivering and pains in the back. This was on Jan 1, 1958, at a time when some Asian-type virus was being isolated in the Midlands, and a diagnosis of influenza was made. Next afternoon he was found comatose, but consciousness returned gradually over the next 4 days. His C.S.F. contained 20 lymphocytes per c.mm., protein was 80 mg. per 100 ml., chloride 720 mg., and sugar 71 mg. The complement-fixation test for influenza remained negative in convalescence, the only positive finding being a titre of 1 : 32 with both acute and convalescent sera against herpes simplex virus, with a mouse-brain antigen prepared according to Balducci et al. (1956).

Three other patients presented with encephalitis-like symptoms following attacks of "influenza"; oculomotor disturbances were common to all three, and all gave negative complement-fixation tests, and, in the two cases where they were done, negative hæmagglutination-inhibition tests also.

Case 8.—A man, aged 50, became confused, diplopic, and unsteady after "quite typical flu" in mid-September, 1957. His diplopia lasted only about 24 hours, but 6 weeks later, when he was seen as an outpatient, he was still unsteady, felt weak, and had trouble with his memory. He was slightly dysarthric and had mild lateral nystagmus and intention tremor. His gait was severely ataxic. He slowly improved after this and when last seen was much better though not ready to return to work. Complement-fixation and hæmagglutination-inhibition tests were negative.

Discussion

The problem is whether encephalitis associated with influenza is caused in some way, directly or indirectly, by the influenza virus, or whether the relationship is a chance one. During an epidemic such as last autumn's usually cases are seldom referred to a laboratory unless they have features of special interest or the diagnosis is in doubt. Among the cases reported here are some where the association of clinical "influenza" with encephalitis was misleading; and less notice may well have been taken of influenza following encephalitic symptoms than of encephalitis following influenza. All the cases reported here have been "selected" in this respect by the clinician or pathologist, and a statistical analysis of them would obviously not be valid.

Serological evidence has been adduced by ourselves and also by others (Dubowitz 1958, Dunbar et al. 1958, and others) to support the diagnosis of influenza-A virus infection in association with encephalitis. Now most of these cases occurred during the epidemic spread of a virus in an almost uniformly susceptible "virgin" population. It would be interesting to know what proportion of the population as a whole would have given a positive complement fixation when the epidemic had just subsided—the time when convalescent sera were taken from most of the cases under discussion. Most of the sera submitted to the Regional Virus Laboratory at this time gave a positive result, but most of them were from patients with a history of "flu", and so were not representative.

Other evidence was sought. Dunbar et al. (1958) estimated that clinical influenza affected 20% of the population; but among those admitted to hospital for any reason the infection-rate (clinical and subclinical) was probably much higher than that.

In a residential school for children with damaged hearts only four of about fifty children escaped illness. The fact that the temperatures of all the children in the school are taken twice daily as a routine made detection of minor illness easier. Though some children had slight pyrexia for only 24 hours, their complement-fixation tests nevertheless became positive.

Sera were taken in December from all the forty-two children operated on for appendicitis in the Children's Hospital, Birmingham, in September, October, and November. Hæmagglutination-inhibiting antibodies to Asian influenza were found in forty. Of fifty-two sera taken at random from children attending as outpatients at that hospital thirty-five had similar evidence of past infection; so had thirteen of twenty adults attending as outpatients at Little Bromwich Hospital. Presumably most of these patients acquired their infection during the epidemic. It therefore seems that a convalescent serum from anybody admitted to hospital, from whatever cause, during the epidemic would have had a good chance of giving a positive complement-fixation test for influenza. Of a much larger series collected in Sheffield after the epidemic Clarke et al. (1958) found that 44% of the population had neutralising antibodies after the epidemic, though 56% of those aged 0–10 years and 70% of those aged 10–20 gave evidence of infection. In view of the very good chance of catching influenza in hospital during an epidemic, our figures agree reasonably well with those of Clarke et al. (1958).

The association of influenza with the cerebral symptoms and postmortem findings in group 1 is quite clear. Whether it is necessary to invoke a specific toxic or infectious action of the virus seems doubtful. We could not say confidently that all the changes seen could not have been produced by the severe anoxæmia and venous congestion associated with a hæmorrhagic pneumonia persisting for several days. "Encephalopathy" seems a more appropriate term than "encephalitis".

To see whether there was anything unusual about viruses from "encephalopathic" cases, strains of virus

isolated from cases in group 1 at the end of the epidemic and convalescent sera from their relatives were compared by the hæmagglutination-inhibition technique with convalescent sera and viruses isolated from uncomplicated cases of influenza in the Midlands at the beginning of the epidemic. The viruses in each case had had one amniotic and two allantoic passages. Eight strains of virus and eight sera were put up against each other in a " chess-board " type of experiment. No differences outside the limits of experimental error were found between any of the viruses.

The ætiological association of influenza, at a time when the infection was so widespread, with encephalitis or myelitis in groups 2 and 3 seems less certain. Although a case could be made out for it, we feel that the evidence for a direct connection is insufficient. This observation is supported by the cases in group 4. Furthermore, it is not rare to elicit a history of respiratory infection or of pyrexia preceding by a few days the onset of encephalitis occurring at times when epidemic influenza is not prevalent.

We endorse the remark of Dunbar et al. (1958) that more evidence is needed.

Summary

Cases are described of encephalopathy, encephalitis, or ascending paralysis associated with Asian-type influenza-virus infection. The diagnosis of influenza was supported by isolation of the virus or by serological means.

Cases clinically simulating postinfluenzal encephalitis, where serological tests for influenza remained negative in convalescence, or where another possible cause of encephalitis was found, are also described.

An attempt is made to assess the significance of positive serological findings for influenza in cases of encephalitis at a time of epidemic spread.

It is concluded that, though the hypothesis is attractive, the ætiological relationship between influenza-virus infection and " postinfluenzal encephalitis " is not proven.

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NEUROLOGICAL DISORDERS ASSOCIATED WITH ASIAN INFLUENZA

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REPORTS of disorders of the nervous system during epidemics of influenza have appeared from time to time (Leigh 1946, Holmes 1947, Jennings 1952). Following the recent epidemic of influenza A (Asian), Dubowitz (1958) reported 2 cases, and further examples were given by Compton Smith (1958) and McGill and Goodbody (1958). In few cases, however, have laboratory studies adequately established that influenza was the primary disorder.

During October and November we saw 4 patients in whom neurological disorders followed a febrile illness suggestive of influenza. We here report these cases and give details of influenza-A (Asian) antibody titres.

Case-reports

Case 1.—A boy, aged 16, was admitted to the Cardiff Royal Infirmary on Nov. 20, 1957. Nine days previously he had felt unwell, with headache, muscle pains, fever, and cough. He was seen by his family doctor, who diagnosed Asian influenza. His symptoms persisted for three days. On the fourth day his fever subsided and he felt better. On the evening of the fifth day his headache returned and he started to vomit. Headache and vomiting increased in frequency and severity until the eighth day, when he became drowsy and was admitted to a local hospital. He was transferred to the Cardiff Royal Infirmary next day.

He was drowsy, irritable, uncooperative, and unable to understand or carry out simple instructions. There were no involuntary movements. The temperature was 98·6°F, pulse-rate 90 per minute, respiration-rate 18 a minute. There was slight neck rigidity. No abnormality was detected in the cranial nerves. In the extremities there was slight reduction in muscle power in the left arm and leg but the tone was normal on both sides. Voluntary movements of both upper limbs were poorly carried out. Sensation to pin-prick and cotton-wool was normal. Tendon reflexes were present and symmetrical, but the plantar responses were extensor. There were no abnormal signs in other systems.

Investigations.—Lumbar puncture on the day of admission yielded a clear cerebrospinal fluid under a pressure of 70 mm. H_2O: cells, less than 5 lymphocytes per c.mm.; protein 20 mg. per 100 ml., chloride 138 mEq. per litre, sugar 80 mg. per 100 ml.

The blood-count was normal. A radiograph of the chest revealed no abnormality. An electroencephalogram on the day after admission showed a grossly abnormal record, with high-voltage slow delta waves and a little theta activity in all leads (fig. 1).

Complement-fixing antibodies for influenza A produced a titre of 1/1024 (Nov. 20) and 1/256 (Dec. 2 and 5). By hæmagglutination inhibition the titre on Nov. 20 was 1/512 for the Asian variety and less than 1/4 for the Scandinavian, Eire, and Dutch strains.

Progress.—His condition remained unchanged for about thirty-six hours and then steadily improved. By Nov. 25 he was fully alert, cheerful, talkative, and free from symptoms. He had complete amnesia for events between Nov. 12 and 23. The electroencephalogram taken on Nov. 25 was normal.

Case 2.—The 13-year-old sister of the boy in case 1 was admitted to the Cardiff Royal Infirmary on the same day. She

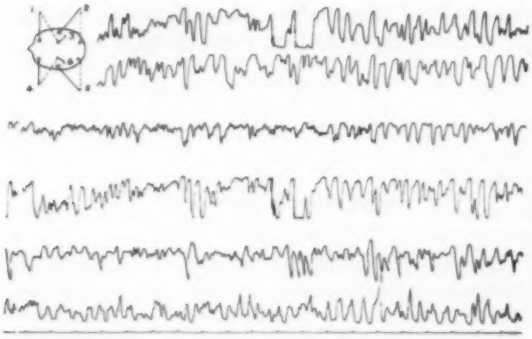

Fig. 1—Case 1: electroencephalogram, Nov. 21.

had been taken ill at the same time as her brother and her illness followed the same course. She became drowsy on Nov. 18 and next morning was semicomatose. She was admitted to a local hospital in coma and was transferred to the Cardiff Royal Infirmary next day.

She was in deep coma. There were no involuntary movements. Temperature 101·6°F, pulse-rate 100, respiration-rate 35 a minute. The pupils were dilated and fixed to light. The fundi were normal. The limbs were flaccid with symmetrically diminished tendon reflexes. Both plantar responses were extensor. There was no response to painful stimuli. No abnormal signs were detected in the cardiovascular or respiratory systems.

Investigations.—Lumbar puncture on the day of admission produced a clear colourless fluid under a pressure of 90 mm. H_2O: cells < 5 per c.mm., protein 39 mg. per 100 ml.; chloride 124 mEq. per litre; sugar 99 mg. per 100 ml.

Hb 15·5 g. per 100 ml., leucocyte-count 11,800 per c.mm. (91% polymorphs). Platelet-count on Nov. 25, 65,000 per c.mm.; Dec. 5, normal. A radiograph of the chest revealed no abnormality.

An electroencephalogram (Nov. 21) showed a grossly abnormal record. The tracing was very flat, but occasional slow subdelta waves occurred exhibiting bilateral frontal predominance. During part of the record the slow activity showed a definite periodicity (fig. 2). A further electroencephalogram on Nov. 27 was normal.

The titre of complement-fixing antibodies for influenza A was 1/2408 (Nov. 20), 1/128 (Dec. 2) and 1/64 (Dec. 5). By hæmagglutination inhibition the titre was 1/480 for the Asian variety and less than 1/4 for the Scandinavian, Eire, and Dutch strains on Nov. 20.

Progress.—Shortly after admission her temperature rose to 104·6°F, the respiration-rate increased to 44 a minute, and her condition became critical. She was treated with parenteral cortisone (50 mg. six-hourly) and penicillin (1 million units six-hourly). Within four hours some clinical improvement was apparent. Next day her pupils reacted sluggishly to light but there was otherwise no change in her condition. Her attitude was one of decerebrate rigidity, with the upper limbs medially rotated at the shoulder joints, extended at the elbows and hyperpronated; the legs were held in extension with the feet plantar-flexed. On Nov. 23 she began to respond to painful stimuli, and to exhibit alternating phases of rigidity and flaccidity. She remained pyrexial but the respiration-rate was less rapid. On Nov. 25, after six days in coma, she recovered consciousness rapidly and was able to recognise her parents. She was then noted to have a foot-drop on the left, with complete paralysis of the extensors and peronei, and an area of sensory impairment to pin-prick over the dorsum of the foot. This was thought to be due to compression of the lateral popliteal nerve. Otherwise her recovery was uneventful. When seen recently, however, she complained that writing was difficult and her script had changed in character.

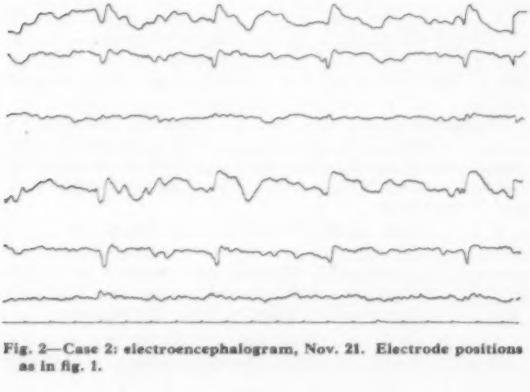

Fig. 2—Case 2: electroencephalogram, Nov. 21. Electrode positions as in fig. 1.

The Family.—The mother, father, and 2 children other than cases 1 and 2 all had febrile illnesses diagnosed as Asian influenza. Complement-fixation tests were done on three who were not admitted. The results were:

	Date	*Complement-fixation (influenza A)*	*Hæmagglutination inhibitions*		
			(Asian)	(Scan- (Eire)	(Dutch)
Father	Nov. 25	1/32	1/64	<1/16 <1/8	<1/8
	Dec. 5	1/16	1/64	<1/16 <1/8	<1/8
Mother	Nov. 25	1/128	1/64	<1/8 <1/16	<1/8
Daughter	Nov. 27	1/128	1/128	<1/32 <1/16	<1/4

This daughter had an episode of drowsiness and headache four or five days after the febrile illness, but recovered without treatment.

These results, and those of cases 1 and 2, indicate recent infection with influenza A (Asian).

Case 3.—A woman, aged 32, was admitted to the Cardiff Royal Infirmary on Nov. 26, 1957. On Oct. 26 she had a short illness of three days, with aching limbs, coryza, and slight cough. This was thought to be influenza. On Nov. 1 blurring of vision, diplopia, and occasional vomiting developed. Three days later she was admitted to a local hospital, where she was found to have a loss of vertical conjugate gaze and blurring of the disc edges; and the right knee and ankle jerks were more brisk than those on the left. At lumbar puncture, the fluid was clear and colourless and under a pressure of 160 mm. H_2O. It contained no cells, and the protein content was 30 mg. per 100 ml.

She was transferred to the Cardiff Royal Infirmary on Nov. 26, 1957, for further investigation, but by now felt perfectly well. She was alert. The pupils were dilated, the right more than the left, and the reaction to light was very sluggish on both sides. The pupil response to convergence was impaired, and there was limitation of conjugate upward gaze. The rest of the cranial nerves were normal. There were no abnormal neurological signs in the upper or lower limbs, and no other abnormal physical signs were demonstrated.

Investigations.—Cerebrospinal fluid (C.S.F.) under normal pressure: cells 5 per c.mm.; protein 37 mg. per 100 ml.; chloride 127 mEq. per litre. Blood and C.S.F. Wasserman and Kahn tests negative. Blood-count normal. An electroencephalogram on Nov. 27 was within normal limits.

Complement-fixing antibodies for influenza A were present at a titre of 1/64 (Nov. 27) and 1/64 (Dec. 5). By hæmagglutination inhibition the titre was 1/128 for the Asian variety and less than 1/16 for the Scandinavian, Eire, and Dutch strains, indicating a recent infection with influenza A (Asian).

Progress.—While she was in hospital the diplopia cleared up completely. A lumbar air encephalogram failed to reveal any abnormality. She was discharged home on Dec. 9, 1957.

Case 4.—A girl, aged 6 years, was taken ill on Oct. 23, 1957, with headache and fever. Next day she felt better but was

thought to have a cold. On Oct. 26 she was listless and reluctant to play. She was, however, well enough to travel to Cardiff next day. During the journey she began to vomit and this persisted, with pain in the back of the neck, until she was admitted to a local hospital on Oct. 30. Here she was found to be drowsy but easily rousable, cooperative, and normally oriented. Temperature 100·2°F, pulse-rate 110, respiration-rate 26 a minute. There was a slight increase in tone and reflexes in all four limbs. The plantar responses were equivocal. Signs of meningeal irritation were present. Lumbar puncture produced a fluid containing 80 lymphocytes per c.mm. and an increased amount of globulin.

Next day she was more drowsy, the tone and reflexes in the right arm and leg were exaggerated, and the right plantar response was extensor. She was transferred to the Cardiff Royal Infirmary on Nov. 1. She was very drowsy, but could be roused by painful stimuli. Speech was limited to the word "yes", and she did not seem to understand simple instructions. Neck rigidity was present, but Kernig's sign was negative. Temperature, pulse-rate, and respiration-rate were normal. No abnormality was demonstrated in the cranial nerves. The limbs were hypotonic. There was slight weakness of the right arm and leg; the tendon reflexes on the right were slightly more brisk than those on the left. The right plantar response

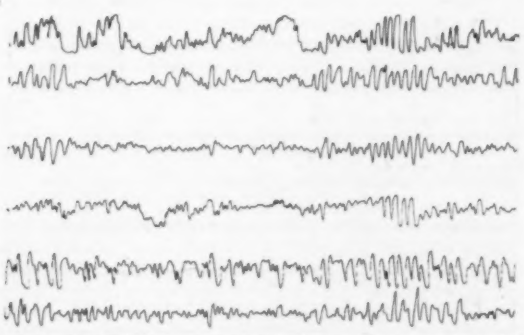

Fig. 3—Case 4: electroencephalogram, Oct. 24. Electrode positions as in fig. 1.

was extensor. The abdominal reflexes were not altered. No other abnormal neurological signs were detected, and the other systems were normal.

Investigations.—Shortly after admission the lumbar puncture was repeated: pressure 55 mm. H_2O; 68 lymphocytes per c.mm.; protein 54 mg. per 100 ml.

Blood-count normal. Radiographs of skull and chest normal.

The electroencephalogram on the day after admission showed intermittent runs of high-voltage smooth delta waves at about 3 cycles a second in all leads. A wide range of moderately high-voltage theta waves also occurred. There was no subdelta or focal activity (fig. 3). Complement-fixation tests gave the following titres:

Date	*Complement fixation*			
	Influenza A	*Influenza C*	*Mumps* S	*Mumps* V
Nov. 1	1/64	1/64	1/8	1/64
Nov. 4	1/64	1/64	1/8	1/64
Nov. 18	1/32	1/64	1/8	1/64
Nov. 27	1/64	1/32	1/8	1/32

By hæmagglutination inhibition the titre was 1/32 for the Asian variety on 3 occasions and 1/16 on Nov. 18. It was less than 1/8 for the Scandinavian, Eire, and Dutch strains. These figures are consistent with fairly recent infection by influenza A (Asian) virus. It is likely that the febrile illness was Asian influenza, but influenza C and mumps cannot be excluded.

Lumbar punctures were performed daily for four days and then at increasing intervals. The cell-count rose to 1300 per c.mm. on the third day after admission and then dropped steadily to 5 per c.mm. on the eighteenth day. At the height of the pleocytosis there was a preponderance of polymorphs, but thereafter the proportion of lymphocytes steadily increased from 60% to 90% of the total cell-count. On Nov. 28 the cell-count was normal. The protein content varied between 40 and 80 mg. per 100 ml. and the sugar between 50 and 75 mg. per 100 ml.; and the chloride remained at about 130 mEq. per litre.

Progress.—A provisional diagnosis of meningitis was made and she was treated with penicillin. The diagnosis, however, was revised to one of encephalitis in view of the cerebrospinal-fluid findings. By Nov. 5 she was greatly improved and mentally alert and cooperative. Speech was normal except for a nasal quality, which her parents said was normal. No abnormal neurological signs could be found except for slight neck rigidity. She was discharged from hospital on Nov. 28. The electroencephalogram on that day showed a very great improvement.

Discussion

In all these patients neurological involvement followed four or five days after the onset of a febrile illness. That this febrile illness was Asian influenza appears to have been established by the results of the complement-fixation tests in 3 cases. The high infectivity of the disease is shown by its spread in the family of the first 2 cases, for the other 4 members of this family had febrile illnesses, and blood from 3 showed evidence of recent infection with influenza A (Asian). Blood was not obtained from the 4th member. The daughter whose blood was examined also had involvement of the nervous system following her attack of influenza. She complained of severe headache and became drowsy, but recovery was uneventful. Case 4 had an illness very like lymphocytic choriomeningitis, and was the only one in whom a cell response developed in the cerebrospinal fluid. The illness followed what was thought to be Asian influenza, and although the results of the complement-fixation tests do not altogether exclude influenza C and mumps, we believe that the neurological disorder in this case, as in the others, followed Asian influenza.

3 of the patients (cases 1, 2, and 4) were very ill and caused some anxiety, but when recovery began it was rapid and apparently complete. In cases 1 and 2 the electroencephalogram, although grossly abnormal at the height of the illness, soon reverted to normal. It has since been reported that the handwriting of case 2 has deteriorated, and this is probably evidence that recovery has not been as complete as was at first thought.

Summary

In 4 patients severe disorders of the nervous system followed a short febrile illness. 3 of the patients had encephalitis and 1 had an illness resembling lymphocytic choriomeningitis. In all of them complement-fixation tests showed evidence of a recent infection with influenza A (Asian), but in one the antibody titres for influenza C and mumps were also raised.

We wish to thank Dr. Idris G. Jones and Mr. Charles Langmaid, under whom the patients were admitted, and Dr. J. D. Spillane for helpful criticism. We are also indebted to Dr. A. D. Evans, of the Public Health Laboratory Service, who carried out and advised us about the complement-fixation tests, and to Mr. R. Marshall for the photographs.

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ACUTE PSYCHOSES DUE TO ENCEPHALITIS FOLLOWING ASIAN INFLUENZA

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THERE have been three great influenza pandemics in the past seventy years, and after each of them various complications have been reported: pneumonia and myocarditis, first described by Leichtenstern in 1896 (Lyon 1956), encephalitis (Leichtenstern 1890, Pfuhl 1892), and psychoses (Rorie 1901). In the influenza epidemic in Jerusalem in 1957 we encountered acute psychotic manifestations in three children.

Case-reports

Case 1.—A boy, aged 15, was admitted on Sept. 25, 1957, in an acute state of confusion, anxiety, and restlessness. He cried and clung to his mother, claiming that she wanted to leave him. His parents related that, a week before, the boy had complained of severe frontal headaches. In spite of this he continued to attend school until two days before admission, when he suddenly left school before the end of lessons, apparently owing to an argument with his teacher. He was very restless when he came home and begged his mother to protect him from his teacher and not to abandon him. On the eve of his admission he suddenly tried to strangle his mother.

On examination no general or neurological abnormalities were found. The boy was in a state of great tension and kept his eyes closed all the time, claiming that his mother had forbidden him to open them. He begged continuously for his mother so that he might suck milk from her, expressing that same wish to every nurse who entered his room. He masturbated for hours and wet his bed. He refused food of any kind. No contact could be established with him.

Treatment and progress.—Because of his extreme restlessness he was kept under constant sedative and tranquillising treatment. During the first five days he had slight pyrexia, which rose only once to 103·1°F. On the second day after admission forced grasping of his left hand was noticed. The first impression was that the boy had acute hysteria probably connected with the argument at school with his teacher. The forced grasping which appeared later seemed to indicate an organic basis to his illness. Further support for this assumption was provided by electroencephalography: the record was grossly abnormal, with generalised slow activity of the delta range, with high amplitude mainly localised in the posterior regions of the brain (fig. 1). Repeated electroencephalography during the next eight days, showed similar diffuse abnormal patterns. Other investigations, including radiography of his skull and chest and chemical analysis of his blood and cerebrospinal fluid (C.S.F.) were normal. On the sixth day in hospital the boy grew calmer. His whole appearance changed; he became quiet, shy, and well behaved. He dressed neatly and ate normally. His orientation in time and place was good, but he remembered nothing of his illness. A fortnight after the onset he was back at school, a composed pleasant boy without any abnormal behaviour.

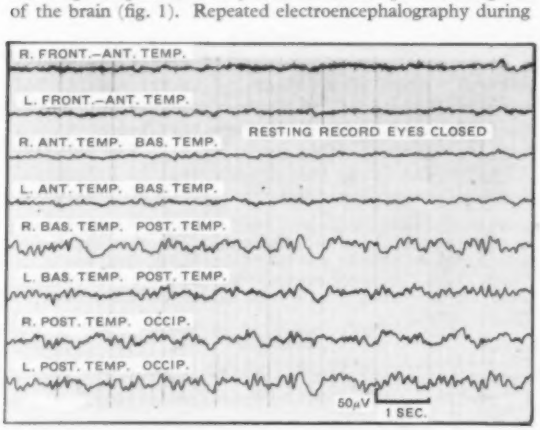

Fig. 1—Case 1: resting electroencephalogram.

Follow-up.—Repeated electroencephalography in the three months following his discharge showed a clear improvement, although the records were still moderately abnormal, with diffuse theta activity (fig. 2). Only sporadic cases of Asian influenza had been reported in Jerusalem at the time of the boy's illness; so we did not relate this acute psychotic reaction to influenza. A later epidemiological investigation revealed, however, that all six members of the boy's family had had Asian influenza after he had been admitted to hospital. Moreover influenza had already been reported among his neighbours three days before the onset of his illness. In view of this a sample of his blood was sent to be tested for hæmagglutinin inhibition of influenza virus A/Singapore/1/57, and a titre of 1:382 was found, proving that the boy had had Asian influenza before his acute psychosis.

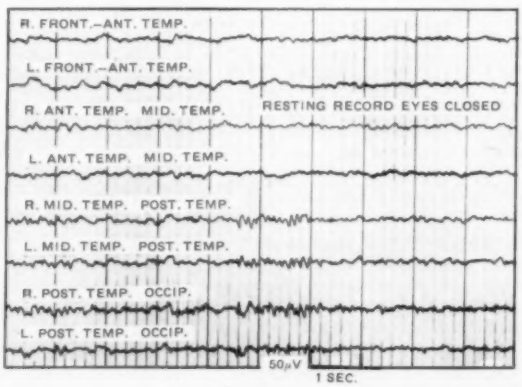

Fig. 2—Case 1: resting electroencephalogram three months after discharge.

Case 2.—A girl, aged 11½ years, had been ill for ten days. In the family all four children as well as the mother had had a febrile disease which had been diagnosed as Asian influenza. After recovery the girl attended school again, but after a week she returned from school complaining of headaches. She lay in bed for twenty-four hours in almost complete apathy. Then suddenly she became very restless, got out of bed, ran about the house, and went to neighbours, telling them that her father had killed her mother, and that she was left alone. The girl complained that she was being followed all the time by a woman who was trying to catch her. She presented a picture of acute anxiety and was brought to the hospital in that condition.

On admission physical and neurological examination and lumbar puncture did not reveal any abnormalities. The blood-count was normal, and the erythrocyte-sedimentation rate (E.S.R.) was 50 mm. in the first hour (Westergreen). Electrocardiography gave a normal tracing. Radiography of the skull was normal, but radiography of the chest showed a slight shadowing in the inner part of the lower left lung and, to a lesser degree, on the right side too. On the basis of this finding viral pneumonia was diagnosed. The titre for influenza virus A/Singapore/1/57 was 1:384. Electroencephalography gave a very abnormal record with generalised slow theta and delta

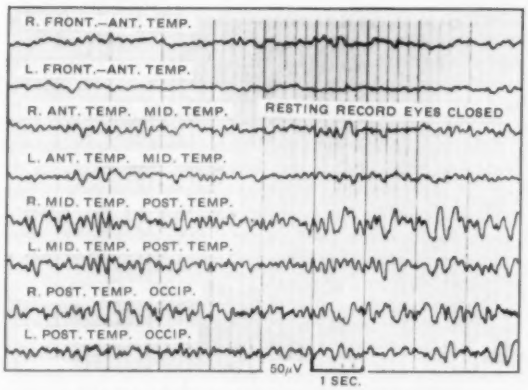

Fig. 3—Case 2: resting electroencephalogram.

activity (fig. 3). During photic stimulation bursts of slow waves and spikes appeared, especially on closure of the eyes (fig. 4). Contact was most difficult to establish with the girl. She remained silent most of the time. Occasionally she would wander about the department looking absolutely lost. At times she would cry and yell for hours for no apparent reason. After four days she gradually calmed down and recognised people, especially her family. She remembered nothing of her illness. A radiograph of her chest before her discharge was normal. After a fortnight she returned to normal life, feeling quite well.

Follow-up.—Repeated electroencephalography after her discharge showed a gradual improvement, although the tracings were still abnormal, with diffuse theta activity and sporadic spiky activity during photic stimulation.

Case 3.—A boy, aged $9^1/_2$ years, brother of case 2, was admitted on Nov. 20, 1957. Three weeks earlier he had been ill, together with other members of his family. During the last two days of his illness he was very restless, got out of bed, moved around aimlessly, and mumbled only incomprehensible words. Although he was known to be mildly retarded, attending a special school for such children, his mother found his behaviour unusually strange and abnormal during his illness. These signs disappeared gradually in two or three days. He became quiet again, went back to school, and for a week was well. Ten days after his recovery he suddenly returned from school before the end of lessons, complaining of severe headache and general malaise. At that time his orientation in time and place was still good. He was put to bed. During the next two days he again became restless, cried, and shouted. He complained that somebody was trying to catch and beat him.

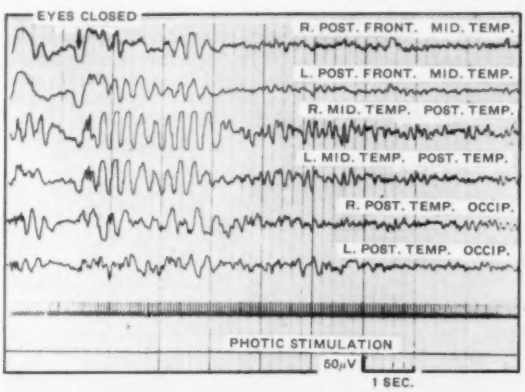

Fig. 4—Case 2: electroencephalogram during photic stimulation.

He was in an extreme state of tension and anxiety and apparently had fears and hallucinations. In this condition he was admitted to hospital.

On admission physical and neurological examination, radiography of his skull and chest, and routine laboratory examinations revealed no abnormal findings. Culture of his C.S.F. for influenza virus was negative. His blood titre for influenza virus was 1 : 192. Electroencephalography gave a diffusely disturbed record with increased theta and delta activity, mainly in the posterior regions of the brain (fig. 5). This confirmed the tentative diagnosis of an organic psychosis in connection with the influenza. Electrocardiography gave an abnormal record with S-T depression in L2 and L3 with T waves of low voltage. On the basis of this finding postinfluenzal myocarditis was also considered.

Progress.—Within ten days the boy calmed down. His whole expression changed, becoming serene, with no signs of fright or anxiety any longer. He started to become oriented in time and place but could not recall what had happened to him, or how he had come to be in hospital. Repeated electroencephalography still gave diffusely abnormal tracings. Electrocardiography seven days later was again abnormal, showing notched T waves in V_3 and V_4. Electrocardiography a week later still was within normal limits. The boy was discharged after a fortnight. He went back to school, but after

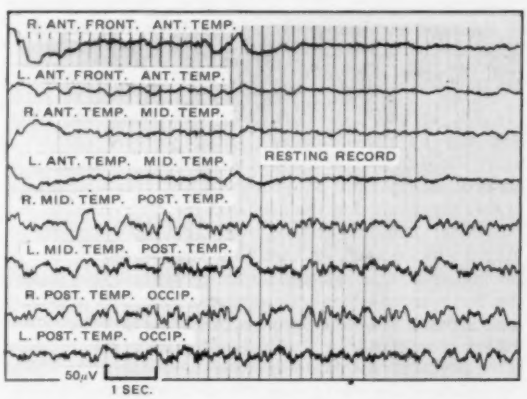

Fig. 5—Case 3: resting electroencephalogram.

ten days he apparently had a relapse of the psychotic reaction and was readmitted in a state similar to that described above, characterised by restlessness and anxiety.

On readmission physical examination revealed wet rales over both his lungs. A grade-II systolic murmur was heard over the base of his heart. His pulse-rate was 120, blood-pressure 120/80 mm. Hg, and liver slightly enlarged. Neurological examination revealed no abnormalities. The E.S.R. was 19 mm. in the first hour (Westergreen). The titre of influenza virus A/Singapore/1/57 hæmagglutinin inhibition in the blood was 1:383—much higher than during his first stay in hospital. Radiography of his chest showed an enlarged hilum of the left lung and patchy shadows at the base of both lungs. Electroencephalography gave a most abnormal record, worse than on the first stay in hospital, showing much theta and delta activity. Electrocardiography showed inverted T waves in V_3 and V_4 and a prominent R wave in aVR, this being a significant change in comparison with the previous electrocardiograms, indicating right ventricular strain and myocardial damage.

Treatment was started immediately with antibiotics, digitalin, and sedatives. At the end of a week the boy recovered from the acute psychotic state and became calm and well oriented again.

Follow-up electrocardiography, although showing an improvement, was still abnormal, with notched T waves in V_2 and V_3.

Discussion

All three patients developed psychotic manifestations from two to ten days after the onset of Asian influenza. These manifestations were almost identical in all the cases, including signs of acute anxiety, confusion, extreme restlessness, and ideas of persecution. The acute psychotic symptoms receded within the relatively short period of from six to eight days, leaving the patients with complete amnesia about what had happened to them during the acute stage of the illness. These three patients were children aged less than 16. Another feature common to all the cases was the diffusely abnormal electroencephalograms which remained abnormal long after the clinical recovery of the patients.

The appearance of acute psychotic states after influenza has been a well-established fact ever since the great influenza pandemic of 1899–1900 (Dillon 1909, Rouge 1909, Graves 1928, Bartstra and Pesman 1950). The manifestations described were manifold and included depressions, manic conditions, amentias, acute delirious states, hysterical reactions, ideas of persecution, and hallucinations (Rorie 1901, Jelliffe 1918). At the beginning of the century some workers argued for and against a direct connection between such psychotic manifestations and influenza. Klemm (1901) rejected the idea of "specific" influenzal psychoses, claiming that, in some patients at least, the psychosis was latent and only activated by the influenza. Other workers suggested bacteriological examinations as a means of correlating the onset of the psychosis with the influenza. Thus Neumann (1914) suggested that the influenza microbe (*Hæmophilus influenzæ*) should be isolated from the C.S.F. by culture on pigeon's blood-agar. In case 3 the striking rise in titre of the influenza virus hæmagglutinin inhibition found during the boy's second psychotic outbreak provided immunological proof of a correlation between the activity of the influenza virus and the psychosis. Another bridge between these psychotic manifestations and the Asian influenza in the present cases was provided by electroencephalography, which revealed an abnormal pattern. The diffuse abnormal electrical activity of the brain in these patients supported the diagnosis of postinfluenzal encephalitis, whose only clinical manifestation was the acute psychosis.

Summary

Acute psychosis came on after Asian influenza in three children.

In all three cases diffuse abnormal electrical activity of the brain was recorded.

The acute psychosis was apparently the only clinical manifestation of encephalitis.

Clinical remission occurred in a relatively short time, appearing much earlier than normal electroencephalograms.

I wish to thank Prof. L. Halpern for his most helpful criticism and advice.

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PSYCHOSIS FOLLOWING ASIAN INFLUENZA IN BARBADOS

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"ASIAN" influenza* was first reported in Barbados on Sept. 14, 1957, and in the five weeks from Sept. 25 to Oct. 31 no fewer than nineteen cases of psychosis definitely attributable to it were admitted to the Mental Hospital. Fourteen gave a clear history of influenza preceding their mental breakdown, and some of these were admitted while still pyrexial.

Fourteen of the patients were women and five were men; their ages ranged from 15 to 67 (average 28, median 24). Most of them were restless, noisy, resistive, and disoriented, and some were untidy and faulty in habits. Seven had hallucinations, and four of these were rational and well-behaved in contrast to the general excitement and confusion shown by the rest of the group. These seven all complained of a strange unpleasant smell but could not describe it clearly:

"Unlike anything I know."
"Unpleasant smell which I can't describe."
"Like a dead smell."

These patients had no such difficulty in describing their visual and auditory hallucinations.

Illustrative Case-reports

Case 10. A woman, aged 26, was admitted from the General Hospital with a temperature of 100·6°. She was restless, resistive, noisy, and obscenely abusive, and she refused to wear any clothes. She improved rapidly on electroconvulsion therapy (E.C.T.) and was discharged on trial after 21 days.

Case 2.—A girl, aged 16, was restless, noisy, talkative and abusive. She gave a hisory of having had influenza recently. She was given E.C.T. but made only slow progress, gradually becoming less hyperactive and abusive. She was discharged on trial after 59 days.

Case 19.—A man, aged 36, was quiet, well behaved, well oriented, and rational in speech, but had striking aural, visual, and olfactory hallucinations. He saw large and small spirits with no clothes on and experienced a sweet smell which he was unable to describe and was unlike anything he knew. His blood Kahn test was positive but his cerebrospinal fluid Kahn and colloidal-gold tests were negative.

He improved rapidly on E.C.T. and was discharged on trial after 24 days.

Case 17.—A man, aged 25, was rational and well oriented, but had aural, visual, and olfactory hallucinations. He saw animals at the windows, and complained of a filthy smell, but appeared to realise that these phenomena were not real. Two days after admission he became violent and attacked the nurses, under the delusion that he was a gorilla. His mother and father had both been discharged from the mental hospital earlier in the year, the mother with a hallucinatory syndrome, and the father with an alcoholic confusional psychosis. He recovered rapidly with E.C.T. and was discharged on trial after 26 days.

The toxic psychosis, whether primarily confusional or hallucinatory, cleared up rapidly. Four patients had no specific treatment, and fifteen were given a short course of electro-convulsion therapy; two of the fifteen had insulin as well. Within 17 weeks all had been discharged, with an average hospital stay of 38 days.

*Though the diagnosis was not confirmed by virological methods, the outbreak coincided with others, in neighbouring areas, which were thus confirmed. Epidemiologically the outbreak—explosive and widespread—was not at all like the influenza to which we have been accustomed in Barbados.

Comment

It is impossible to give the incidence of toxic psychosis following Asian influenza in Barbados, because the epidemic, though widespread, was not severe, and many of those affected (among the population of about 230,000) did not consult their doctors. Moreover, it appears that some patients with mental symptoms following influenza were successfully treated at home by the family doctor. The presence of psychosis could not be correlated with the severity of the febrile attack; most of the affected patients were incapable of giving any history about their confusional state, and their relatives were of little help. In the two cases where the patient had previously been in the Mental Hospital the influenzal attack may be regarded as merely precipitating a relapse.

Summary

A toxic psychosis was seen in 19 patients in Barbados shortly after (or towards the end of) an attack of Asian influenza. Most were young adults.

15 patients had electroconvulsion therapy and 2 insulin as well. 4 had no treatment. All recovered rapidly.

7 patients presented an unusual hallucinatory syndrome, in which bizarre smells were often experienced.

I wish to thank Dr. R. A. Webb for his assistance in compiling this report, and Dr. M. A. Byer, director of medical services, for permission to publish it.

HEPARINISED BLOOD FOR EXCHANGE TRANSFUSION

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IN blood-transfusion the use of citrate as the anticoagulant has become almost traditional. For most purposes it is entirely satisfactory, and it has the advantage that blood treated with suitable citrate-dextrose mixtures can be kept long enough to be held in stock against an emergency. However, the work of Firt and Hejhal (1957), on the toxicity of citrated blood given in large rapid transfusions raises the question of whether it is ideal for exchange transfusions in the newborn. The sudden collapse seen occasionally during exchange transfusion could be due to citrate intoxication.

In other respects citrated blood may not be ideal for exchange transfusion. The addition of acid-citrate-dextrose mixtures lowers the hæmoglobin content of the donor blood by simple dilution, and can lead to expansion of the red cell by as much as 20% (Mollison 1951). If the cells shrink to normal size after they are transfused, the patient receives, in effect, a transfusion of blood with a low packed-cell volume. Neither of these effects is desired.

The removal of part of the supernatant citrated plasma after sedimentation of the red cells would cancel both the dilution of the donor blood and the expansion of the red cells, and would lessen the likelihood of citrate intoxication: the use of sedimented erythrocytes for exchange transfusion is recommended by Sisson et al. (1958). But it is more rational to use some other anticoagulant. Experience with heparinised blood is here recorded.

Material and Method

In 1948–54 I had personal experience of about 70 exchange transfusions in English hospitals, using citrated blood. The records are not readily available, but there were several cases of severe shock, which appeared to be due to acute heart-failure. This developed towards the end of the transfusion and was common enough to make one approach exchange transfusion with some apprehension. 3 babies died. The same syndrome was observed in Canada in 1954–55 when citrated blood was used, though the exchanges were done slowly with 10ml. aliquots, a blood-volume deficit was maintained, frequent halts were observed during the exchange, and calcium gluconate was given at each 100 ml. of the exchange.

In November, 1955, I began to use heparinised blood in an attempt to avoid this syndrome, and I have not used citrated blood since. 21 exchange transfusions have been performed. 9 babies with rhesus hæmolytic disease received 13 exchange transfusions; 5 with ABO incompatibility disease received 7; and 1 with severe "physiological" jaundice was given 1. This last, aged 12 days, was transfused through the saphenous vein at the groin, but in the remainder the umbilical vein was used.

The indications for exchange transfusion, in a baby with rhesus hæmolytic disease, have been:

1. A birth-weight under 5½ lb.
2. A cord-blood hæmoglobin under 15 g. per 100 ml.
3. A cord-blood bilirubin over 2·8 mg. per 100 ml.
4. A capillary-blood bilirubin of 20 mg. per 100 ml. or over at any time.

Transfusions were also given to babies with ABO hæmolytic disease or with "physiological" jaundice in whom the bilirubin rose to 20 mg. per 100 ml. or above at any time. In a really small baby I would have performed an exchange transfusion at a lower level of bilirubin than 20 mg., but such a case did not arise. From November, 1955, to December, 1957, 30 babies were assessed and 15 were selected for treatment.

Blood has been obtained from a panel of donors living in the town and has been collected by gravity into silicone-coated bottles, to which 1500 I.U. (1·5 ml.) of heparin had just been added. Care was necessary to ensure thorough mixing of the blood and heparin during withdrawal.

An exchange of 80 ml. per pound body-weight was considered desirable, and enough blood was taken for this. 1500 I.U. of heparin sufficed for 450–600 ml. With a large baby more than one donor has been used.

While the blood was being collected, preparations were being made for the transfusion, so that the exchange could start as soon as compatibility of the blood had been established. Thus the blood was in use within forty-five minutes of collection and while it was still warm.

The technique of the exchange was conventional except that a three-way direct-flow syringe (Allen and Hanburys, catalogue no. 16486) was used. This syringe, together with an infant's (size 8 French) clear plastic œsophageal feeding-tube, greatly facilitates the procedure. Before the replacement was begun, the syringe and tubes were flushed with physiological saline solution containing 100 units of heparin per ml. This solution was all expelled, and no heparin was injected into the baby apart from that in the donor blood. Aliquots of 10 ml. were used in all exchanges; in the early cases, at the start of the replacement, 15 ml. was removed and 10 ml. given until there was a deficit of 25 ml. Latterly this precaution has been omitted.

At the end of the transfusion the catheter was removed and two or three fine nylon sutures used to close the skin over the umbilical root so that it might be kept fresh and clean in case another exchange was needed. Repeat exchanges have been done with the same technique. Neither antibiotics nor protamine sulphate were used.

Results

In the 21 exchange transfusions with heparinised blood no difficulties arose. In two cases a few drops of blood

oozed from the umbilical stump, but this ceased within an hour or two. Surprisingly, there was no bleeding at the incision in the case where the saphenous vein was used.

The babies stood the procedure very well and nothing resembling the shock syndrome was observed in this series.

Discussion

This small series affords no proof that the absence of shock was related to the substitution of heparin for citrate; but the change was made in the hope of avoiding collapse, and this hope was realised. From the work of Firt and Hejhal (1957) it certainly seems that citrated blood might precipitate cardiac failure both by direct action on the myocardium and by vasoconstriction in the pulmonary vascular bed. In their experiments citrate intoxication caused a rise in venous pressure; and it is well known that such a rise may occur during exchange transfusion.

Final hæmoglobin levels when heparinised blood was used were not compared with those when citrated blood was used, but it is a reasonable assumption that the final levels would be higher when the fluid transfused contained only 1·5 ml. of anticoagulant solution than when it contained a much larger volume.

Because it keeps poorly, and because it would be inappropriate for many patients with hæmorrhage, heparinised blood cannot be used routinely for transfusion. But in exchange transfusion for hæmolytic disease of the newborn, time can nearly always be taken to obtain a donor and to match the bloods. Time taken to ensure that the blood used for exchange transfusion is fresh and heparinised may be time well spent.

This also is the experience of Pew (1956) in his preliminary report of a very similar technique.

Summary and Conclusion

In 21 exchange transfusions in newborn babies, the use of heparin as the anticoagulant proved simple and safe. Because citrate is toxic in large rapid transfusions, heparinised blood seems preferable for this purpose.

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SEROUS OTITIS AS A CAUSE OF CATARRHAL DEAFNESS IN CHILDHOOD

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CATARRHAL deafness in childhood is important and often misdiagnosed. The schoolteacher may call the child backward, the parent may say that it is inattentive and naughty, and often the child does not realise that it is deaf. Catarrhal deafness is not necessarily associated with earache or discharge from the ears, and it is not a very severe form of deafness in most cases. Usually it has a variable course, and most children are cured either spontaneously or by the removal of adenoids and nasal infection, but in a few it becomes irreversible, persisting into adult life as a handicap which does not respond to treatment.

In the present investigation 96 of 1000 children consecutively referred to an ear, nose, and throat clinic in the past three years had catarrhal deafness. All the children with a perforated tympanum, whether wet or dry, were excluded from this number, and so were all the children whose deafness disappeared after politzerisation. The children with catarrhal deafness were aged 4–15 years, and there were 50 boys to 46 girls.

TABLE I—OPERATIONS IN RELATION TO MIDDLE-EAR FINDINGS

53 children with proved serous otitis:	Fluid in			Total
	Both ears	Rt. ear	Lt. ear	
Tonsils and adenoids removed at operation	8	..	11	19
Adenoids alone removed at operation	8	4	2	14
+*Proof puncture of antra producing mucopus:*				
Bilateral	10	1	1 } 15	
Unilateral	..	..	3 }	
Adenoids removed elsewhere:				
Adenoids present	6	1	3	10
Adenoids absent	3	5	2	10
+*Proof puncture of antra producing mucopus:*				
Bilateral	3	..	1 } 5	
Unilateral	..	1	.. }	
Thick mucus present	15	3	2 } 20	53

Remaining 43 cases:	Dry on stab puncture	No stab puncture	
Tonsils and adenoids removed	15	9	24
Adenoids alone removed	9	1	10
Adenoids removed elsewhere:			
Adenoids present	4	1	5
Adenoids absent	3	1	4
+*Proof puncture of antra producing mucopus:*			
Bilateral	3	1 } 9	
Unilateral	4	1 }	
Total	—	—	43

Operative Findings

It is unusual to see a deaf child with a normal tympanum. It was therefore decided, at operation, to attend to the tonsils and adenoids and nasal infection in accordance with the history and clinical findings and simultaneously to examine the ears for abnormal appearance or mobility of the tympanum. 53 children had fluid in one or both ears, and of the remaining 43 children 31 had empty middle ears on stab puncture, and in 12 stab puncture was not done, because the drumhead appeared normal. In 33 of the 53 cases of proved serious otitis the fluid was thin, and in 20 it was very tenacious thick mucus. 29 children had previously been rid of their adenoids, and 15 of these still had adenoids. Table I sets out the operations in relation to the findings in the middle ear.

Duration and Type of Deafness

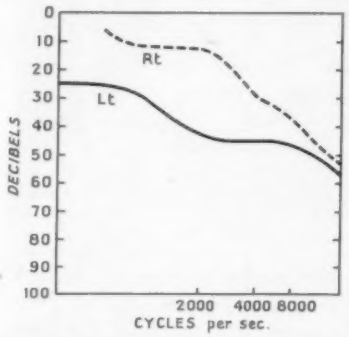
The history of these children is interesting in relation to these operative findings. In 31 cases a parent could state the duration of the deafness accurately (table II).

TABLE II—DURATION OF DEAFNESS IN RELATION TO MIDDLE-EAR FINDINGS

—	Fluid present		Dry on stab puncture	No stab puncture
	Thin	Thick		
Duration of deafness (mos.)	24 36 12 18 4 10 7 48 12 2 18 1 24 1 2	12 84 24 24 60 12 24 24 12 24	2 3 6	3 2 6
No. of cases (% of each group total)	15 (46%)	10 (50%)	3 (10%)	3 (25%)

In 15 cases the parents were unaware of deafness at the clinic, and in the remaining 50 cases the parents usually said that deafness came on with colds. 3 children were deaf after a previous adenoidectomy; 26 had a history of discharge from the ear; and 16 were said never to have had earache. It is surely very significant that the parents who noticed deafness continuously and for the longest duration in most cases were those whose children had serous otitis.

Audiographs were recorded in 10 of the more reliable children, and in 6 of these a loss of high tones was found. The accompanying air-conduction graph is from one of these. In all the children variation in the degree of deafness was prominent.



The degree of deafness was in no case severe, and in 2 children who had fluid in the middle ear only a slightly reduced response to the whispered voice was found. Unless, therefore, the ear is examined very thoroughly for abnormal appearance and mobility, such cases may be easily missed.

Association with Allergy

In this group of 96 children 8 were considered, by virtue of their history and examination, to be allergic. Asthma, frequent sneezing, and bronchitis in infancy were regarded as important in this respect. Nasal smears were not done as a routine, but in 2 cases small biopsy specimens from the inferior turbinate confirmed allergy. 6 of these children had fluid on stab puncture and in 2 of these it was very thick mucus. At follow-up all the children had normal hearing and a normal appearance of the tympanum, although 2 children required a second stab puncture. In 3 cases the antra, when washed out, were found to be infected.

Appearance of the Tympanum

No specific appearance of the drum characterised serous otitis, but its pathological condition was recognised more and more successfully with practice. The mobility of the drum, determined with a Siegle's speculum, was reduced or absent in many cases, but in a few children with very thick mucus the mobility was apparently normal. The commonest finding in serious otitis was a fatty yellow colouration of the tympanum, which had its normal lustre and in some cases appeared to be indrawn. A slate-grey tympanum was not found in this series. 3 children came to the clinic with air-bubbles in the middle ear. A fluid level was never seen. In 6 cases the drumhead appeared to be overmobile, and in all of these fluid was found at operation.

Treatment

Most authorities agree that paracentesis of the drum should be done if fluid in the middle ear is suspected (Politzer 1869, Suehs 1952, Rawlins 1954). It is preferable to do this after inflating the middle ear to prevent damage to the mucosa over the promontory. This is not always possible, because in some cases the eustachian tubes are blocked. In this series a paracentesis or stab puncture was done under anæsthesia with a Trautmann's myringotomy knife in all the cases in which there was any alteration of the appearance or the mobility of the tympanum. In 2 cases the tympanum was of normal appearance and mobility but previous audiographs had shown moderately severe deafness, and for this reason alone a stab puncture was done; thick mucus was found. After the stab puncture characteristically a drop of straw-coloured fluid would appear. Suction was applied until the middle ear was empty, after which the ear and tube were inflated with the Siegle's speculum. When thick mucus was present, suction applied to the stab wound produced a tenacious thread of mucus which could often be drawn out beyond the external meatus. When all the mucus was removed, the drumhead appeared baggy and overmobile, and in some children this appearance persisted. In a few cases in which no fluid was produced stab puncture restored the mobility of the drum to normal after inflation with the Siegle's speculum.

Several children, not in this series, have tolerated a stab puncture in the clinic, but it is important to be quite sure that fluid is present before doing this, because only then is it almost painless. Some workers have suggested that two stabs be made at the same time in different parts of the tympanum. This seemed to be unnecessary under anæsthesia because then suction could be used, but in adults it is useful in difficult cases. No adverse effects resulted from stab puncture. The wound heals in a few hours, and the scar migrates to the periphery of the tympanum, where it disappears.

Results of Treatment

65 children were examined after an interval of 6–36 months after the operation. 9 were still deaf. Table III shows the distribution of cases.

The presence of fluid in 6 of the 9 cases still deaf at follow-up was confirmed at a second operation.

Character of the Fluid

The thin fluid of serous otitis is yellowish, sticky, and mucinous. The thick fluid is greyish white and can be drawn out into knotty strands. In 2 cases of serous otitis (not in this series) fluid was collected in sufficient quantity to be analysed. I am indebted to Dr. H. J. Gibson for the following reports:

(1) Bright amber fluid, fairly clear, viscosity ++. Cells 420 per c.mm., mainly degenerate tissue cells with a few lymphocytes. Protein 8·5 g. per 100 ml. Sodium 280 mg. per 100 ml. = 125 m.Eq. per litre. Potassium 33 mg. per 100 ml. = 8·25 m.Eq. per litre. Film: no bacteria found; the mucinous material is stained by mucin-specific stains. Culture: no growth. Conclusion: the material consists of a mucinous high-protein fluid probably derived from breakdown of tissue cells, together with plasma transudate.

(2) Pale-yellow fluid, small deposit of blood, otherwise clear. Red blood-cells ++. No pus, tissue cells, or crystals. Film: no

TABLE III—RESULTS

—	Fluid in one or both ears at operation	Dry on stab puncture	No stab puncture	Total
Children reporting for follow-up	40	16	9	65
No. still deaf	4	4	1	9
Interval since operation (mos.)	18, 12, 34, 34 — Fluid still present in all 4 cases	13, 28, 24, 12 — Fluid now present in 2 cases	24	
Children not attending for follow-up	5	4	3	12
Children operated on in last 6 mos. to Dec., 1947	13	3	3	19
Total	—	—	—	96

bacteria. Culture: no growth. Protein 5·2 g. per 100 ml. Viscosity low. A protein electrophoresis showed Albumin 54%, Globulin $\alpha 1$ 9%, $\alpha 2$ 10%, β 10%, and γ 17%. "The protein pattern is similar to the normal serum pattern. This would agree with the fluid being a serous exudate."

For comparison straw-coloured fluid from a blocked maxillary sinus was examined and reported on as follows:

Yellow fluid, no obvious mucus, fibrin clot +. No cells. Protein 2·95 g. per 100 ml. Electrolytes: sodium 138·5 mEq. per litre = 315 mg. per 100 ml., potassium 4·0 mEq. per litre = 16 mg. per 100 ml., chloride 104 mEq. per litre = 610 mg. per 100 ml. This fluid has the composition of a plasma filtrate.

Discussion

The importance of this interesting, elusive, and curable condition lies in the fact that it is not fully looked for in this country as a common cause of catarrhal deafness. Serous otitis has many pseudonyms: secretory otitis media, hydrotympanum, tubotympanic catarrh, secretory middle-ear disease, &c.—indeed "serous otitis" is not a universally accepted name for this condition. It was described by Politzer (1869) and Hinton (1874). Between the two world wars little was written about it, and Suehs (1952) could find only 1 case published (in 1927) in America in 1923–40.

Ætiology

The cause of serous otitis is primarily a mucus block of the eustachian tube, which mucus, because it is moved down towards the orifice by ciliary action, causes a lowering of pressure in the middle ear with consequent outpouring of fluid. The pathology of the fluid seems to confirm this. The cause may be:

(1) Fixation of the wall of the tube or blockage to its orifice by a growth.

(2) Interference with tubal function by malocclusion of the teeth (Bierman and Brickman 1946).

(3) Any condition which delays the mucus lining the tube from emptying by ciliary activity into the nasopharynx—e.g.:

(*a*) *Adenoids.*—It should be remembered here what Aschan (1954) says about lymphatic tissue in the tube:

"In agreement with Eggston and Wolff it has been impossible to find any histological evidence, either from fœtal or post-fœtal material, to indicate that the lymphatic tissue of the nasopharynx ever extends as far as, still less invades, the pharyngeal orifice of the eustachian tube."

(*b*) *Nasal infection or irritation.*

(*c*) *Air travel.*

(4) Otitis media, often of low virulence, treated improperly with antibiotics. This may be responsible for the apparently increased incidence of serous otitis in the past few years.

(5) Bullous influenzal otitis.

Treatment

Treatment should aim primarily at restoring tubal patency and the normal elasticity of the tympanum by removing the fluid, and secondarily at eliminating associated causes. This is not a generally accepted procedure in this country, for Bateman (1957) says about serous otitis: "Once again I emphasise that myringotomy is not an essential part of the treatment of these patients."

In this series of 96 children 53 had serous otitis. (Of 192 ears 78 were affected, some cases, of course, being unilateral.) Of the 53 children affected 20 had thick mucus in one or both ears, and it is in this type of case that spontaneous cure is very hard to imagine. One patient under my care, an adult, aged 45, had been deaf for fifteen years and had a large collection of very tenacious mucus in both ears. When this was removed, his hearing vastly improved; but it is not quite normal now because of the overmobility of the drumheads which has resulted from the disease.

Hantman (1952) states: "It, i.e. serous otitis, must be assiduously searched for in children, for here is a golden opportunity for reversing pathology before changes render the process irreversible with permanent hearing damage."

I am grateful to Dr. C. D. L. Lycett, medical officer of health for Wiltshire, and to his staff for their cooperation and interest; Mr. E. Glatz and Mr. R. D. Owen for their generous help and advice; and Miss M. Stock for her skilled assistance.

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New Inventions

A NEW NEBULISER

THIS nebuliser has been developed over a period of seven years in the Pneumoconiosis Research Unit of the Medical Research Council, in response to a demand for a nebuliser which was robust and easy to clean. The new nebuliser not only satisfies these requirements but has a performance at least as good as that of any other similar device at present available.

DEFECTS OF EXISTING NEBULISERS

When this work was begun (1951) two kinds of nebuliser were in use in the wards of the Pneumoconiosis Research Unit: the 'Collison Inhaler' and various types employing a glass spray unit.

The Collinson inhaler is in many respects excellent, but it has one serious defect: the liquid is fed into the spray through three blind holes in an ebonite spray unit. Since most liquids used in nebulisers tend to form a deposit, these holes inevitably become blocked sooner or later and are then, because they are blind, difficult to clean.

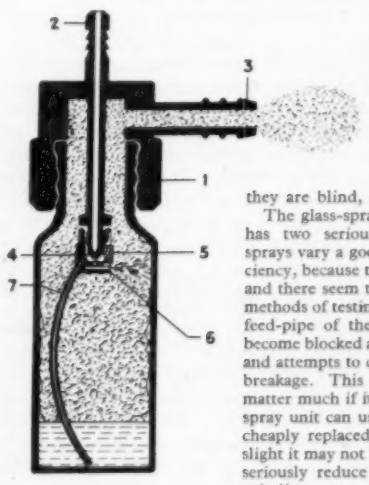

Fig. 1.

The glass-spray type of nebuliser has two serious defects: (1) the sprays vary a good deal in their efficiency, because they are hand-made, and there seem to be no satisfactory methods of testing them; and (2) the feed-pipe of the spray is liable to become blocked after a period of use, and attempts to clear it often lead to breakage. This breakage does not matter much if it is obvious, for the spray unit can usually be easily and cheaply replaced; but if damage is slight it may not be noticed, yet may seriously reduce the output of the nebuliser.

Other nebulisers have since become available which to a greater or less extent overcome these defects, but only at the cost of complexity, difficulty of manufacture, and the use in some cases of metals. In our experience neither chromium-plating nor the use of stainless steel or monel metal prevents corrosion; in any case many pharmaceutical manufacturers specify the use of a non-metallic spray for their products.

CONSTRUCTION OF NEW NEBULISER

The nebuliser (figs. 1 and 2) is made entirely of 'Perspex', which seems comparable to glass in its resistance to corrosion and freedom from ill effects on nebulised solutions, yet is at least as easy as metal to machine and fabricate in a reproducible fashion.

Fig. 2.

The nebuliser consists of a solid cap (fig. 1, 1) into which can be screwed any suitable bottle—of glass, perspex, polyethylene, or nylon.

The thread is that of a glass 'Universal' container, which is suitable, cheap, and easily obtained. Universal containers are very robust, but unfortunately coloured ones are not available at present.

The cap carries on its top surface the inlet connection (fig. 1, 2) and on one side the outlet connection (3). The inlet connection communicates with a fine jet (4) on to which is screwed a knurled nozzle (5). This nozzle carries a circular baffle plate (6) mounted on an eccentric pillar through which passes a flexible (polyethylene or polyvinylchloride) feed-tube (7) of suitable length to reach nearly to the bottom of the bottle. The nozzle has a central opening, the "throat", which is of such a size that as the air-jet passes through it a vacuum is created which draws liquid up the feed-pipe so that it is atomised by the air-jet. The resulting spray impacts against the baffle plate and the coarser droplets (more than about 8 μ diameter) are trapped, coalesce, and fall back into the liquid.

In earlier models the baffle plate was in the form of an anvil fixed in the bottom of the bottle, with its surface about 2 cm. away from the nozzle, copying the basic Collison design, but recently it has been found that bringing the baffle to within about 1 mm. of the nozzle considerably increases the density of the cloud. A small increase in the maximum droplet size results (from 6 to 8 μ diameter) but this does not appear to be any disadvantage in practice.

The nebuliser requires a gas pressure of at least 10 lb. per sq. in. and preferably 20. It was originally designed for a standard oxygen-cylinder reducing valve, which is set at 20–25 lb. per sq. in.; but it can also be used, with a suitable control valve and hose, on the 60 lb. per sq. in. piped oxygen supply that is now installed in many hospitals. When connected in this way the nebuliser can conveniently be clipped to the bed with the double clip provided, as shown in fig. 2.

At a pressure of 20 lb. per sq. in. the standard instrument delivers 10 litres of oxygen a minute, and nebulises about 20 ml. of liquid per hour. The nebuliser is not suitable for operation with a hand bulb, but can be operated off an electric pump of sufficient power.

A blockage can easily be cleared by unscrewing the nozzle (5) with the fingers. The blockage is usually in the annular orifice between the jet and the throat, so that once the nozzle is unscrewed it can be simply washed out.

Any blockage of the feed-pipe (7) can be cleared if necessary by passing a piece of wire right through it, as it is now open at both ends, but blowing through it is usually sufficient.

The jet hardly ever becomes blocked, but if it does, it can be pricked with a fine wire and cleared by blowing back up it.

In addition to being practically unbreakable and easy to clean, the nebuliser appears to have as good a performance as any other on the market. This has been achieved by comparing it with various other models as they became available, and copying those features which seemed to improve the performance. The question of what in fact constitutes a "good" performance is at present a very open one. Briefly the criterion used has been the output of droplets in the size range 1–6 μ diameter at a given gas-flow. The method of determining this, and its justification, will be discussed in a later publication.

In addition to its use for producing therapeutic aerosols, the nebuliser can be used as a humidifier. With water in the bottle, and cylinder oxygen, which is practically dry, it produces more than 100% humidification. This compares favourably with the usual bubbler devices which, unless heated, never raise the humidity above 50%. The disadvantage of using the nebuliser as a humidifier with the usual methods of administration of oxygen is that the relatively high pressure upsets the calibration of the flow-meter supplied for use with the low-pressure bubbler type humidifier. This can, however, be rectified by the use of an appropriate correction table, obtainable from the makers.

I am grateful to Dr. J. C. Gilson and the staff of the Pneumoconiosis Research Unit for their constant help and encouragement, and especially to Mr. V. Gubb who made many models of the nebuliser. The drawing was prepared by Mr. W. H. Roberts, and the photograph was supplied by Messrs. Richard Daleman of 325, Latimer Road, London, W.10, who are the makers.

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Reviews of Books

Neuropathology

J. G. GREENFIELD, M.D., F.R.C.P., consulting pathologist, National Hospital for Nervous Diseases, London; W. BLACKWOOD, M.B., F.R.C.S.E., M.R.C.P.E., pathologist, National Hospital for Nervous Diseases, London; W. H. MCMENEMEY, D.M., F.R.C.P., pathologist, Maida Vale Hospital for Nervous Diseases, London; A. MEYER, M.D., emeritus professor of neuropathology (Institute of Psychiatry), University of London; R. M. NORMAN, M.D., M.R.C.P., neuropathologist, Burden Mental Research Department, Frenchay Hospital, Bristol. London: Edward Arnold. 1958. Pp. 640. 105*s*.

WE have long been waiting for a substantial yet accessible textbook in the English language, in which the accumulated knowledge of the histopathology of the nervous system is integrated and presented critically. No-one was better qualified to undertake such a work than the late Dr. J. G. Greenfield, and he and his colleagues have produced a book which promises to remain the standard work of reference for many years to come.

All aspects of the pathology of nervous and mental diseases are included, with the exception of tumours. Dr. Greenfield has provided most of the chapters, and particularly valuable is his introductory account of the normal and abnormal cytology of the neurone and neuroglia, and the sections on infections, trauma, demyelinations, system degenerations of the brain-stem, cerebellum, and spinal cord, and peripheral neuropathies, in which he has distilled the essence of his profound experience. He has been helped by several contributors, each one eminent in his own subject: Professor Blackwood on vascular diseases, Dr. McMenemey on dementias, Professor Meyer on anoxias, intoxications, epilepsy, and psychoses, and Dr. Norman on prenatal malformations, birth injuries, and diseases of early life.

A historical appraisal of Alzheimer's disease and accounts of the effects of atomic explosions and ultrasound waves illustrate the book's range; and neurological topics in the forefront of present-day interest, such as hypertensive cerebral disease, the blood-brain barrier, carcinomatous neuropathy, temporal-lobe epilepsy, the anatomical basis of prefrontal leucotomy, and the nosological problems of diffuse cerebral sclerosis, are authori-

tatively discussed within the general framework. The lesser-known ways of neuropathology are also explored, and the practising neuropathologist in particular will welcome the detailed account of the primary dementias, and Dr. Norman's clear and beautifully illustrated survey of a subject in which the disciplines of classical histopathology still promise rich rewards.

This handsome book contains over 500 illustrations of high quality. Each chapter has its own bibliography, and there are some 2500 references in all. The authors' hope that their labours will give the neurologist and psychiatrist that basis for diagnosis and logical treatment which only pathology can supply is fully realised. Not only the pathologist but the neurologist, the neurosurgeon, and everyone working in the neurological sciences will find the book an indispensable source of knowledge. To Greenfield, who did not live to see its publication, it stands as a memorial worthy of a life rich in achievements.

Principles of General Surgical Management

H. A. F. DUDLEY, F.R.C.S.E., lecturer in surgery, University of Edinburgh. Edinburgh and London: E. & S. Livingstone. 1958. Pp. 203. 27*s*. 6*d*.

IN this newcomer to the important range of books on what is sometimes inappropriately called "minor" surgery, Mr. Dudley has used the term surgical management in the title; and this fails to do justice to the contents since many of the methods he describes would be required in medical wards. Moreover, the book is concerned with more than principles; it is in fact one to which a student or a newly qualified man could confidently turn for exact direction in such procedures as lumbar puncture, the application of plaster-of-paris, venepuncture, catheterisation, and so on. Clear directions and information are also given on more general topics, including nutrition, shock, and electrolyte therapy; and in this respect it is good to record that the book is up to date (corticoid therapy and the effects it may have when surgery is undertaken have been included). The book ends with a chapter on side-room and investigative work, which is a useful collection of the methods required for the common investigations of urine, blood, and other biological fluids. One criticism: this is a book to be tucked away in a convenient place for ready and rapid reference, but its shape is such that a shelf is required—or a poacher's pocket. It is not long, and more convenient proportions may be possible in a later edition.

The Biologic Basis of Cancer Management

FREDDY HOMBURGER, M.D., research professor of medicine, Tufts University School of Medicine, Medford, Massachusetts. London: Cassell. 1958. Pp. 354. 75*s*.

IN forewords to this book Dr. L. V. Ackerman, Dr. C. C. Little, and Dr. A. Ochsner emphasise the need to bridge the often very wide gulf between experimental cancer research and its clinical applications. They believe that the book will do this and so broaden the knowledge and outlook of specialised research-workers and also help all doctors interested in cancer and concerned in its treatment.

With some reservations, this claim is justified. The book's principal advantage over collections of specialised essays lies in its more connected plan; the experimental and clinical aspects are usually developed in successive chapters and then an attempt is made to correlate them whenever possible. The drawback, of course, is that no one author is likely to be uniformly successful in covering such an enormous range and he cannot hope to satisfy every specialist worker. Even if he avoids factual errors (and there are not very many in this book), a successful balance of emphasis can be achieved only by a critical selection of the data, and that calls for an outstanding grasp of the whole subject. Understandably, Dr. Homburger has not wholly succeeded in reaching this high standard; indeed he mentions that the idea of this book was rejected by one publisher, who was advised that no one person could write it. Consequently, it is to some extent a "review of reviews," fortified by judicious selection, sensible comments, and sound and detached judgment, without pretension to any particular originality.

One of its most valuable features is a series of tables summarising the main points detailed in the text. Such tables cover, for instance, environmental carcinogenic agents and corresponding cancer sites; details of some of the principal carcinogens; lists of tumours in which chromosomal influences are prominent; neoplasms of endocrine organs; changes in the tumour-bearing host; and a long summary of the natural history and clinical course of a wide range of human cancers.

The book is in four parts: ætiology, biological properties, diagnosis, and treatment. Ætiology is taken to include all causative factors such as the hereditary background, environment, and the influence of viruses and hormones. Chemical carcinogens are adequately reviewed; but on p. 32 the footnote should refer to benzpyrene and not benzanthracene. The device of working backwards—for instance, from Andervont (1942) to the discovery of hepatocarcinogens (Yoshida, 1931)—is used at various points and is rather irritating; and so is the way that the references (generally very good) to each chapter are congregated at the end of the book, without any chapter numbers on the page-headings, either in the text itself or in the reference pages at the end. Treatment (including prevention, surgery, and radiotherapy) receives only 28 pages, among which chemotherapy, generally considered to be a promising prospect as well as one of great theoretical interest, gets only 12 pages.

Nevertheless, the book as a whole is good and will probably achieve its aim.

Principles of Ophthalmoscopy

JOHN K. ERBAUGH, M.D. Norristown State Hospital, Norristown, Pennsylvania. Springfield, Ill., Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1958. Pp. 69. 42*s*.

THE details of pathological change in the retina—vascular sclerosis, microaneurysm formation, increased exudation, and frank hæmorrhages—are probably of greater value in identifying the responsible systemic disease than are the pathognomonic pictures of established retinopathy seen in the later stages; and the value of this small book of four chapters rests chiefly on the emphasis it lays on these points. Preliminary detection of opacities of the media with the ophthalmoscope is helpfully described, and the details of the normal fundus are considered at length, before the changes seen in the pathological disc, vessels, and fundus generally are reviewed.

The general form of the book is attractive, but it seems a pity that more of the excellent colour photographs were not included in place of the coloured diagrams, useful though these are.

A Study of the Major Psychoses in an English County

Maudsley Monographs, no. 3. MICHAEL SHEPHERD, D.M., D.P.M., senior lecturer, Institute of Psychiatry. London: Institute of Psychiatry and Chapman & Hall. 1957. Pp. 159. 25*s*.

THE applications of statistical methods in psychological medicine have been mainly concerned with assessing improvement under different kinds of treatment, and little attention has been paid to the vital statistics of mental disease.

Dr. Shepherd here compares the admissions to a county mental hospital for the two triennia 1931–33 and 1945–47. The study is based on examination of the administrative and clinical records of 1223 patients followed for five years after their admission. The results show a striking difference in the number and type of admissions during the two periods, and an improved outlook, assessed in various ways, for patients entering hospital during the second period. Only the most tentative conclusions can be drawn about the factors that may have contributed to this change.

The book shows the drawbacks and limitations of this type of retrospective investigation, and draws attention to the importance of carrying out a well-planned and long-term prospective study of a similar kind. Dr. Shepherd presents his material well and succeeds in making his mass of figures easy both to understand and to read.

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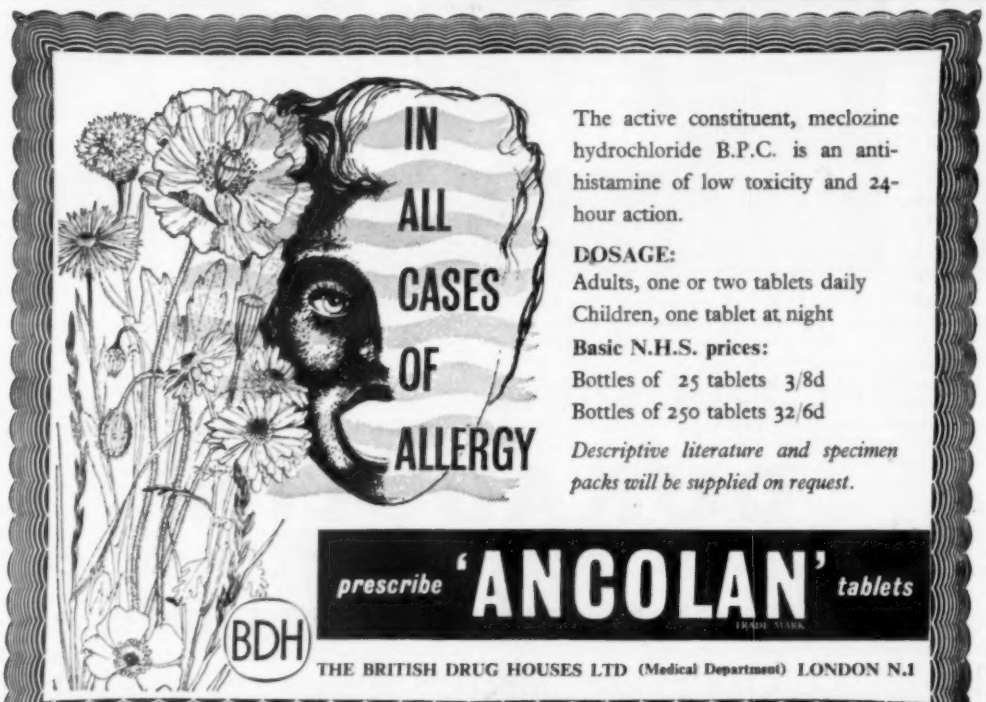
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THE LANCET
LONDON 5 JULY 1958

The Partnership

"My job", said the Minister of Health ten years ago, "is to give you all the facilities, resources, apparatus and help I can, and then to leave you alone as professional men and women to use your skill and judgment without hindrance. Let us try to develop that partnership from now on." Since July 5, 1948, the partnership of which he spoke has been strained sometimes to breaking-point, but its development is still perhaps the chief need of the National Health Service. For the N.H.S. is something quite different from the conventional State medical service in which the doctor takes orders from Authority: it is simply a legislative device by which doctors can continue their work without charging fees and by which the nation's insufficient medical resources can be used to better advantage. In organisation and planning to these ends, the most valuable initiative and ideas will often (though not always) come from the people who actually look after patients; but, on the other hand, planning and organisation may weaken professional responsibility and professional enthusiasm unless these people feel that they can have an effective part in it whenever they choose. Though they will do all they can for their own patients, they may take no interest in the service as a whole, and in its evolution, unless it specifically offers them participation and hence a chance of getting the results they want. To have a sense of partnership in it they must know that their voice will be heard, and heeded, by an administrator who shares the Ministerial concept of his job.

For our part we think the National Health Service one of the biggest improvements in the life of this country since the war. Thanks to very hard and intelligent work by a great many people, professional and lay, it has done much to better the conditions of medical care, especially in hospital, and it has been an immense comfort to the public. But, after only ten years' experience, any jubilation must be at best provisional; for the initial gains to be expected from more rational organisation would be bought too dearly if the cost were an eventual decline in the spirits of the people whose work is organised. Even today, unfortunately, the morale of many who take part in the service is not as high as it ought to be: in its new bottles some of the wine that should be sparkling has gone flat or even sour. Where there is evidence of such depression or disappointment, especially among the young, it should be taken very seriously indeed. One of the reasons for it is obvious, and needs only passing mention here because it has become the subject of a Royal Commission. Mr. BEVAN, in his message of ten years ago, said that when fees were abolished the new situation must not mean "any unfair worsening of a doctor's material livelihood". This, he said, was vital; and he was right: yet the worsening has taken place, and virtually all of us would describe it as unfair. Indeed, most of us think that the Treasury has taken advantage of inflation to reduce remuneration in the service—as compared with remuneration outside it—to levels more convenient than those that had been negotiated; and we think that successive Governments have been less than straightforward in their treatment of those who entered a national service at the nation's request. This, however, is not the cause of the vaguer but deeper malaise which found expression in a letter we reproduced from the Widdicombe File a month ago.[1] The complaint of that letter was essentially that the status of the doctor, as partner in the service, is depreciating: and this, we fear, is true. We have never been among those who held that hospitals, for example, belong to the medical staff, who can do what they like with them; but we suspect that the pendulum has now swung too far towards lay management of medical affairs, and that consequently the service stands to lose much that doctors ought to be giving it—and which in fact nobody else can give.

Though lay intention cannot be wholly excluded, the main reason why most doctors now feel "out of it" is the elaboration of administrative machinery. Of course, the N.H.S. is a very big, as well as a very complex, organisation; and big organisations always tend to induce bureaucracy—whether the environment is that of Melbourne or Moscow, Manchester or Milwaukee. Nevertheless, the British are said to be very good at streamlined organisation when they really give their mind to it. So let us examine, if briefly, some of the means suggested for making the administration of the N.H.S. more appropriate to its purpose, and more efficient.

THE MINISTRY

The first suggestion, often made in the '40s and lately revived, is that the service should be run by an autonomous national corporation, comparable to the B.B.C. Unhappily, though attractive to the professions, this is constitutionally impossible: a body which spends hundreds of millions of public money, which it does not itself raise, must be controlled by a Minister answerable to Parliament. On the other hand, there is no constitutional reason why the Minister who looks after the health service need have a department so unimaginatively similar to other Government departments as it is at present. Twelve years ago, when the service was entrusted to the Minister of Health and Local Government, the disadvantages were offset by the fact that this was a relatively important department, whose chief had an influential position in the Cabinet; but, when Local Government was removed from it and the residual Ministry was confined to medical affairs, the opportunity might have been taken to redesign it on less conventional lines—recognising that it is the administrative nucleus of an entirely novel kind of public service. Even now such reconstruction ought to be considered; and we do not think we are offering a merely medical view when we say that the Ministry

1. *Lancet*, June 7, 1958, p. 1221.

would be better suited to its unusual functions, as well as being more acceptable as the head office of the service, if its professional element were strengthened. Repeatedly we have hoped for a Minister who would show himself as the perpetual champion of the service; but, though many Ministers have fought its battles against the Treasury, their duty in public is, on the contrary, to represent the Government—to explain (as a rule) why things cannot be done. Besides, regarded as representative of the service, the Minister has the demerit of continually moving on. Nor can we expect the secretary of the Ministry, though permanent, to assume the role of either titular head or chief officer of a medical service. Is it then really impossible that in this particular Ministry the chief permanent official should be a professional man? Since the subject we are discussing is morale, which depends on people's feelings (rational or irrational), we must say frankly that professional people in the service would regard its control as less remote if it were not so emphatically lay.

Again, though the Ministry and its servants have done distinguished work in the creation of the service, and have shown both courage and insight in coping with the extraordinary difficulties of its first ten years, their very immersion in its daily affairs hinders their sitting back and forming long views on its development. This was to have been the task of the Central Health Services Council, which in the plans for the N.H.S. was accorded high importance as both a representative and a planning body—being, indeed, described as the brain of the service. But, because of its large size, diverse constitution, and infrequent assembly, the Council has not been found really suitable for this major responsibility; and, though many of its committees have given farseeing advice on particular problems, the Ministry has never used the Council in the way intended, or encouraged it to become a creative force. Planning, in the sense of deciding priorities, has mostly been kept within the Ministry itself; and unquestionably much wisdom has been shown. Many of the achievements of the service owe much to the Ministry's steady pressure—big ones such as the improvement of mental hospitals and the better care of old people, and small ones such as the more frequent visiting of children in hospitals. For general practice it has favoured the practitioner's direct access to pathology and X-ray departments and has promoted the idea of the family doctor as leader of a medical team; and, if its approach to the renaissance of general practice has been more cautious than some of us could wish, we must respect Dr. GODBER's explanation (p. 2) that "it would not be right to attempt to formulate a plan for the development of general practice centrally and then impose it". Nevertheless, valuable though this leadership has been, we have never felt sure that the Ministry was facing the underlying issues of the service and had reached a policy for its development as a whole. Do the hospitals, public health, and general practice receive the right share of our resources? If not, what needs to be done to shift responsibilities and burdens and manpower from one to the other? If, for the sake of economy and efficiency, contraction of effort is needed at one point, and expansion at another, do the professional and financial incentives in the service promote the desired changes?[2] Rightly or wrongly, we suspect there are still some big lacunæ in the policy of the service and some inconsistencies in its application; and, if the Central Health Services Council is not the right body to study them, the planning capacity of the Ministry might perhaps be strengthened by the appointment of a smaller group—say, half a dozen experienced but not too elderly people, paid a half-time salary, and with access to whatever secretarial and statistical help they want—who would be charged with keeping the policy of the service under continuous review. Nothing much, at any rate, would be lost by trying the experiment; and if such a group were prepared to receive and consider constructive criticism they would also fulfil the incidental but very necessary function of providing an address to which reformers and dissidents could usefully post their suggestions and objections.

BOARDS AND COMMITTEES

Whether or not the machinery of the Ministry needs to be supplemented, there can be no doubt that the machinery of hospital administration needs to be simplified; and an inquiry into it could properly be started soon, before any more interests have time to vest.

Those of us with fairly long memories will recall that hospital regions and hospital groups were both originally conceived for the same general purpose—to get the hospitals of an area to play as a team instead of individually. After much discussion, in which the regions were sometimes to be large and sometimes small, both boards and management committees were put into the service; but possibly this was no more than an example of the extravagant generosity of the times, and we might get on just as well or better without one or the other? From time to time, abolition of the regional boards has been proposed; but, if one is to go, we should ourselves be inclined to eliminate the management committees. Regional boards have acquired, for better or worse, more administrative functions than, as planning authorities, they were meant to have; and, if the number of these boards was doubled, so that the average size of regions was halved, each should be able to maintain direct contact with all its hospitals individually. Day-to-day management would revert to the house committees, which would thus regain their soul, and those hospitals and institutions that have a genuine need to work in close association could link themselves by less formal and elaborate means than a common administration. In this way one of the three tiers of hospital administration could probably be taken out without endangering the structure; and the amount of time and trouble this would save would be enormous.

Even so, the simplifying process should not stop there; for perhaps as much good, or more, could come of fresh examination of the constitution of the boards and committees themselves. We should not be surprised to find that at least half their work arises from their being too big; for a big board or committee, meeting

2. *ibid.* 1956, i, 237.

only occasionally, can seldom reach a decision on any important problem except by referring it to a committee which can go into it more carefully. Unfortunately (if we may propound a variant of PARKINSON's law [3]) the amount of work increases with the number of *committees* available for its completion. Certainly it has been very helpful to the N.H.S. that so many able people should have been willing to give up so much time to the conduct of its boards and committees, burning gallons of midnight oil over its interminable agenda; and something would as certainly be lost by having smaller boards which would contain less variety of experience. Yet the gain in expedition and labour would be quite immense if (as TAYLOR suggested years ago [4]) the regional boards were reduced to an average of eight members, meeting often enough to be fully familiar with their business and able therefore to take the decisions themselves. They would have to be paid an honorarium of course, and a big one; but their job would, after all, be no less important than that of the executive directors of other big concerns; and if the Government want the best people for such work they cannot sensibly limit their choice to the rich or retired.

THE UNITED VOICE

How would such streamlining of hospital administration affect the partnership we are advocating? Clearly, it would reduce the likelihood of doctors serving on the executives, and would thereby disappoint those who want to see the professions heavily represented on the boards and committees which administer the service. But in our view the demand for this kind of professional representation is and always has been misguided.[5] A board ought, naturally, to give more weight to the views of a medical advisory committee, presented unitedly, than to those of its individual medical members, who are (or should be) appointed for their personal qualities and not as experts or as accredited representatives of the hospital staffs. But in practice the layman will inevitably be confused if he receives medical advice from two quarters, and the influence of the advisory committee can easily be weakened by the presence of doctors on the board, who may speak with a different voice. Indeed, the result may be that the board, getting divergent guidance, will feel free to take its own line. Unless, therefore, the professions are granted absolute majorities on the boards (which seems improbable) they will do best to concentrate on providing, for each executive, an advisory committee which is in a position to offer a considered opinion on behalf of the professions concerned. If the chairman of this committee, sitting with the executive as a non-voting member, produces an expert opinion of this kind, his board will think at least twice before ignoring it. To go on trying to make the boards themselves representative of everybody and everything will mean that they get bigger rather than smaller, and that they do their work through even more committees. The proper course, as we see it, is to reduce the administrative bodies both in number and in size, but to make sure that each of them, in deciding matters of moment, has the benefit of a corporate professional opinion.

PROFESSIONAL INITIATIVE

If it were true that our profession had been nationalised (as people so often and so wrongly assert), doctors would be able to influence the service only through these official channels. But in point of fact, though most medical men and women work in contract with public bodies, the profession has a separate and thriving independent life, based on its own societies and institutions. We cannot too often repeat that in this country doctors are *not* State officers or Civil Servants; and it would be a great pity if, even within the service, they began to feel that initiative must always come from the centre rather than the periphery. For example, those who think that general practitioners ought to have part-time hospital appointments need not wait for an administrative circular but should set about seeing whether and how what they want can be arranged in their own areas; for that is how new things are still most often done. A more vigorous suggestion we have heard is that, instead of reflecting negatively on the defects of a tripartite service, local doctors from all branches should form a small unofficial group of their own—to look into what is wrong in their area and to make sure that it is put right. A really active ginger group of this kind might (for intraprofessional reasons) find it convenient to meet anonymously and remotely, hooded and at midnight; but no such anxious considerations need deter those of more academic or timorous habit who prefer to make their criticisms of the service, and their proposals for its amendment, through their associations, colleges, or faculties. In the past year many of the principal professional bodies have set out some of their opinions in memoranda of evidence to the Royal Commission on Remuneration; but in general their corporate capacity for constructive thinking on the medical services is too little cultivated. The British Medical Association hopes to undertake a review of these services, which should be invaluable if it rivals in foresight the report of the Association's Medical Planning Commission before the war. Exceptionally well placed for making background studies of medical policy is the Royal College of Physicians of London, which could helpfully produce more of the documents with which it has sometimes stimulated professional discussion. In promoting the development of the service, King Edward's Hospital Fund and the Nuffield Provincial Hospitals Trust (whose latest progress report appears this week [6]) have contributed ideas as well as money. Of all the King's Fund contributions, none perhaps will do more good in the long run than its Administrative Staff College, where partnership is seen and presented as a necessity. On p. 42 Dr. W. S. PARKER suggests that there should also be a general staff college which could give young doctors an administrative understanding that would later help them to help the service. Unquestionably medical knowledge, in its growing complexity, will not be fully applied unless quite a lot of members

3. Parkinson, C. N. Parkinson's Law. London, 1958.
4. Taylor, S. *Lancet*, 1951, ii, 725.
5. *Lancet*, 1951, ii, 719.
6. A Record of the Progress of Schemes and Descriptions of New Projects, 1955–58. Fourth Report. Nuffield Provincial Hospitals Trust, Nuffield Lodge, Regent's Park, London, N.W.1.

of our profession are led to take a special interest both in what CLARK [7] calls administrative therapy and in the larger subject of therapeutic administration.

Among national organisations, the N.H.S. is remarkable because it represents a new kind of partnership between the State and the professions: its purpose is to enable people to work effectively to their own professional standards. This partnership breaks down if either side disclaims responsibility—for instance, if a doctor, conscious of some remediable administrative fault which is lowering the quality of his work, does nothing more positive than blame "the service". Such dissociation of the administrative and professional parts of the undertaking always does damage; for discontent without appropriate action is anything but divine. Moreover, the truth is that, though administrators have been slow in solving some of the problems of the service, there are others which only the medical profession itself can solve. The rigid and routine nature of training for specialties, and the barriers between them, are the result of professional policies—and policies by no means confined to this country. Is it the administrators of the N.H.S. who are making it so difficult for young men to have the useful experience of going for two or three years to one of the Commonwealth countries where they are so badly needed? How much of the difficulty of getting into general practice has arisen because practitioners no longer set sufficient store by postgraduate hospital training? Even the problem of the senior registrars and the S.H.M.O.s is presumably insoluble—whatever the Government do—until consultants make up their mind about the advantages and disadvantages of a swelling of their ranks, with perhaps a consequent diminution in their prestige. Looking round at the many difficulties of the service which obviously demand some fresh approach, it seems that the best means of making progress would be a statutory period of amnesia in which all of us forgot what we had ever said before. Meanwhile, however, we make no apology for recalling and repeating the plea for partnership which appeared in our editorial of July 3, 1948:

"If we continue to think of the National Health Service as a State service it will fail, but if we recognise it as our own service we can make it a great and increasing success."

The Ætiology of Leukæmia

FOUR years ago we reviewed the work of LUDWIK GROSS on transmissible mouse leukæmia.[8] GROSS used for his experiments two contrasted inbred strains of mice; the Ak strain, 70% of which develop lymphatic leukæmia at the age of 7–10 months, and the C3H strain in which the incidence of spontaneous leukæmia is only 0·5%. Cell-free filtrates were prepared from the organs of leukæmic Ak mice; when these were inoculated into newborn C3H mice, less than 24 hours old, nothing happened immediately and no tumour developed at the site of inoculation; but in the mouse's middle age (the normal life-span is 2½–3 years) 81% of these mice developed leukæmia; if the inoculation was delayed until the mice were 2–6 days old, only 55% became leukæmic; and if the inoculated mice were more than 7 days old, no leukæmia occurred. GROSS also showed clearly that whatever was transferred from the leukæmic Ak mice caused leukæmic changes in the C3H cells themselves, since the C3H leukæmia could only rarely be transplanted back into Ak mice. GROSS concluded that the lymphatic leukæmia in Ak mice was caused by an agent transmitted through the embryos from one generation to the next; and, since not all mice carrying the agent develop leukæmia, and some may die from other causes after they have transmitted the agent to their offspring, true hereditary transmission may be simulated. When GROSS attempted to prove that this leukæmic agent was filtrable, some odd results appeared. If the material was filtered through Selas microporous porcelain, quite a lot of the inoculated newborn C3H mice developed parotid tumours at an average age of 3·3 months, instead of leukæmia at about 10 months. On the other hand material filtered through Berkefeld N candles produced mostly leukæmia and a few parotid tumours. These unexpected findings clouded an otherwise clear story.

On the whole these results have been confirmed by others,[9–11] and several new points have emerged.[12] The transmissible agent from the Ak mice has been found to induce subcutaneous fibrosarcoma in some animals as well as parotid tumours in others. This finding underlines the oncogenic potentialities of the agent. But GROSS found that, using a particular inbred strain of mice, only leukæmia was produced by inoculation and tumours did not appear.[13] A more surprising experiment showed that cell-free extracts from tissues of apparently normal Ak (or similarly leukæmia-prone C58) mice inoculated into newborn C3H mice could induce leukæmia and, in a few instances, parotid tumours.[14] Further experience has shown that there is considerable variation in the potency of the leukæmogenic agent and in the susceptibility of the hosts even among inbred strains. When this was realised potent agents were selected for study, and it was found that the potency could be increased by cell-free passage through generations of C3H mice. GROSS has now developed a leukæmogenic agent that will induce leukæmia in up to 97% of inoculated suckling C3H mice 1–14 days old after a latent period of only 3–4 months.

The technique of using newborn mice less than 1 day old for the inoculation of tumour-producing agents has now been adopted by several laboratories, and some curious results have been reported. GRAFFI et al.[15] prepared filtered extracts from Ehrlich mouse carcinoma and some other tumours, and inoculated them into a strain of mice known to have an incidence of spon-

7. Clark, D. H. *Lancet*, 1958, i, 805.
8. *Lancet*, 1954, i, 401.
9. Woolley, G. W., Small, M. C. *Cancer*, 1956, **9**, 1102.
10. Furth, J., Buffett, B. F., Banasiewicz-Rodrigues, M., Upton, A. C. *Proc. Soc. exp. Biol., N.Y.* 1956, **93**, 165.
11. Dulaney, A. D., Maxey, M., Schillig, M. G., Goss, M. F. *Cancer Res.* 1957, **17**, 809.
12. Gross, L. *ibid.* May, 1958.
13. Gross, L. *Proc. Soc. exp. Biol., N.Y.* 1954, **86**, 734.
14. Gross, L. *Cancer*, 1956, **9**, 778.
15. Graffi, A., Bielka, H., Fey, F. *Acta hæmat.* 1956, **15**, 145.

taneous leukæmia of less than 1%; 34–75% of the inoculated mice developed myelogenous leukæmia after a latent period of 4–8 months. FRIEND[16] obtained similar results and showed that the myelogenous leukæmia could be transmitted by inoculation of cells into adult mice of the same strain. This phenomenon of induction of leukæmia by cell-free extracts from tumours is the reverse of GROSS's induction of tumour growth by inoculation of leukæmogenic agents. GROSS considers that these findings emphasise the importance of variation in the recipient, and points out that parotid tumours develop from leukæmic filtrates only when the inoculated host is less than 16 hours old; above this age, only leukæmia appears.

A set of experiments supporting the hypothesis that the leukæmogenic agents are viruses have been reported by STEWART and her co-workers.[17] They showed that the leukæmic agents could be grown in tissue-culture on mouse kidney or chicken chorion allantois and would then induce parotid tumours, but not leukæmia. There are some other properties that support the virus hypothesis. For example, the material can be stored without loss of potency at −70° C for 3½ months or so; studies with the ultracentrifuge suggest that the leukæmogenic particles are about 50–70 mμ in diameter, and electron microscopy shows particles of a somewhat similar order. Extracts filtered through membranes of 340–200 mμ porosity can induce leukæmia, but extracts filtered through membranes of 140–93 mμ porosity still induce parotid tumours.[18]

To explain all these findings GROSS[19] proposed the hypothesis of "vertical transmission" of a pathogenic agent. By this term he means the transmission of extraneous pathogenic agents from one generation to another by germinal cells or occasionally, as in the mammary carcinoma of mice, through the mother's milk. This contrasts with the usual methods of transmission of infectious diseases by contact, by food, through the air, or through the agency of insect or other vectors. In these known methods of transmission, the transfer takes place in a few days or weeks, and thus the spread can often be traced without difficulty. But "vertical transmission" works differently, and according to GROSS has the following characteristics.

The pathogenic agent, transmitted by the germinal cells or the mother's milk, may remain latent for a considerable portion of the host's life-span so that the infected animal appears in perfect health but can still transmit the seeds of disease to its offspring; thus C3H newborn mice receiving the pathogenic agent from Ak mice do not develop leukæmia till middle age, and by then they have mated and may have passed on the disease, via the germinal cells, to their own offspring. Sometimes the agent may not become activated at all during the lifetime of the host, and in some instances an agent is harmless for its own carrier host but can cause fatal disease when transferred to another strain or species. GROSS points out that several examples of this type of transmission are known in nature (e.g., *pébrine*, the silkworm disease studied by PASTEUR; mosaic disease of potatoes; and Rocky Mountain fever and tularæmia transmitted through the eggs of tick vectors). Certain types of bacteriophage are also transmitted from one generation to another; LWOFF[20] showed that bacteriophage may remain dormant until activated by certain agents, including X rays, and once activated the phage may destroy its own host by lysis. The activating agents for leukæmia are hardly known; we suspect that ionising radiations and chemical poisons such as benzol may have this effect, but we have no idea how they work or what is the nature of the change induced in the transmitted pathogen.

In four years, then, GROSS has consolidated the evidence for the "vertical transmission" by cell-free agents of mouse leukæmia and certain mouse tumours; and it is likely that chicken lymphomatosis is similarly transmitted. But whether these ideas can be applied to human leukæmia is doubtful. GROSS himself points out that the evidence will be hard to get. Clearly human leukæmic material cannot justifiably be inoculated into newborn infants. Tracing an agent transmitted vertically requires the study of several generations; human leukæmia was recognised as a distinctive disease only a century ago, and its modern study with reasonably accurate case-finding dates back hardly a generation. Another difficulty, raised by the fact that tumours as well as leukæmia can be produced by inoculation of material from a single source, is that we do not know whether we are dealing with a single agent with varying potentialities, or several agents transmitted at the same time. Four essential conditions seem, on GROSS's theory, to be needed for the development of leukæmia[19]: (1) inherited susceptibility of the host, (2) the presence from birth of a leukæmogenic agent, (3) an activator that may be intrinsic (metabolic or hormonal) or extrinsic (physical or chemical), and (4) conditioning of the host to allow the activators to stimulate the pathogenic agent to produce leukæmia (or tumour). So far as human leukæmia is concerned, we know hardly anything about these points. We have no means of detecting whether a pathogenic agent has been transmitted or is still present in the parents of the leukæmic patient, and all we know of activation is some suggestive evidence that exposure to X rays or other ionising radiation can be followed by leukæmia[31] and that certain chemicals may act in a similar way.

Despite the impasse that study of the viral transmission of leukæmia and tumour formation seems to have reached for the moment, this work is clearly of immense interest. But to the physician dealing with the leukæmias, the interest after four more years' research remains academic. Indeed, if GROSS is right, we are faced with an undetectable leukæmic agent transmitted at birth which becomes active in a set of circumstances at present undefined. Such a theory holds out little hope of therapeutic advance.

16. Friend, C. *J. exp. Med.* 1957, **105**, 307.
17. Stewart, S. E., Eddy, B. E., Gochenour, A. M., Borgese, N. G., Grubbs, G. E. *Virology*, 1957, **3**, 380.
18. Gross, L. *Ann. N.Y. Acad. Sci.* 1957, **68**, 501.
19. Gross, L. *Blood*, 1954, **9**, 557.
20. Lwoff, A. *Ann. Inst. Pasteur*, 1953, **84**, 225.
21. *Lancet*, 1957, i, 1130.

Annotations

NEUROLOGICAL COMPLICATIONS OF ASIAN INFLUENZA

IN the recent epidemic of Asian influenza the illness was usually neither severe nor lengthy; but in a few of the enormous number of cases complications developed, some of which involved the nervous system. These neurological complications are discussed in four contributions that appear on earlier pages of this week's issue. Encephalitis is perhaps the best established of them. Commonly it arises about the fourth to tenth day after the onset, when the patient seems to be recovering or to have recovered from the initial illness; and it is characterised by impairment of consciousness with bilateral extensor plantar responses and few or no localising signs. In the purely encephalitic cases the cerebrospinal fluid (C.S.F.) is normal. The electroencephalogram (E.E.G.) is extremely abnormal with pronounced delta activity which may be continuous or occur in bursts on a predominantly flat record. The patient's condition may be critical, but recovery is usual and in most cases complete. Other types of encephalitis attributed to Asian influenza include encephalomyelitis and an ataxic encephalitis [1] similar to that which may follow chickenpox. It may, however, also present as a psychotic outburst in which the patient becomes restless, noisy, and violent. In these outbursts the E.E.G. is grossly abnormal with distinct delta activity, justifying the view that they are a symptom of encephalitis and do not represent a latent psychosis which has been revealed by a generalised infection.

Observers from Bombay [2] to Birmingham and Barbados to Jerusalem believe that their cases of encephalitis were due to Asian influenza, and many will agree with them; but it is difficult to prove the connection beyond doubt. Clinical evidence can be supported by antibody titres indicating that Asian influenza coincided with encephalitis, but Dr. Flewett and Dr. Hoult (p. 11) show that this evidence must be evaluated critically. They point out that when the cases arose there was an epidemic of influenza in the neighbourhood, and there was therefore a good probability that any person in the region would show evidence of recent infection, and that this probability was even greater in the hospital population than in the general population. Nevertheless, viewing the evidence as a whole, it is reasonable to conclude that the encephalitis is the result of the influenza. Whether the encephalitis is due to the presence of the virus in the brain, to activation of some other organism by the influenzal virus, or to the provocation of an allergic reaction is unknown. This problem arises in other forms of encephalitis, such as those associated with mumps, chickenpox, and vaccinia.

Another complication of Asian influenza is aseptic meningitis, which may be found with or without encephalitis. Udani et al.[2], describing influenza in children in Bombay, report 5 meningitic, 5 encephalitic, and 11 mixed cases. Acute polyneuritis has also been described in association with influenza, and 2 cases are described by Dr. Flewett and Dr. Hoult which might be attributed to Asian influenza. But here the specific relationship is much less clear, and it will probably further confuse the problem of the ætiology of polyneuritis if influenza is regarded as a specific cause.

1. Horner, F. A. *New Engl. J. Med.* 1958, **258**, 983.
2. Udani, P. M., Athavale, V. B., Sayed, B. A. *J. of J.J. Group of Hosp. and Grant med. Coll.* **11**, 288.

MENTAL HEALTH AND NURSERY-SCHOOLS

IN a nursery-school the easy introduction of the 3-year-old to a wider society is an "upward extension of the family rather than a downward extension of the primary school," [1] and sets a pattern for good relationships in the future. It is not surprising that those in charge of child-guidance clinics and others who have to care for children with special problems—for example, the partially deaf—wish to secure the admission to nursery-schools of some of the children. The character of nursery-schools would, however, be changed if too great a proportion of handicapped children were admitted and they ceased to cater for a cross-section of the community.

At a recent conference in London of the Nursery Schools Association, the part that these schools could play in the promotion of mental health was examined against the background of financial restrictions. Even in London there are places for less than 10% of the children between 3 and 5. Teachers from nursery-schools described, as did Taylor twenty years ago,[2] the problems of young mothers in suburban communities, as well as the frightening anxieties of the mother beleaguered in her 16th-floor flat while her son plays in the asphalt jungle below. It is to the credit of the education committees of London and Bristol that between financial crises they have been able to slip planned nursery-schools into the ground-floors of some of the new blocks of flats. We may need nursery-schools as well as colleges of technology in the coming years.

PENICILLIN AND CHLORAMPHENICOL

THE action of penicillin is primarily bactericidal, whereas that of chloramphenicol is primarily bacteriostatic. In a summary of evidence from in-vivo and in-vitro experiments Jawetz and Gunnison [3] showed that the effect of combining two such agents is unpredictable. The result depends on the relative amounts of the two antibiotics in the combination and on the organism's sensitivity to the bactericidal drug. That antagonism between antibiotics may be a clinical reality hazardous to the patient was shown by Lepper and Dowling,[4] who reported that when penicillin and chlortetracycline were used together in the treatment of pneumococcal meningitis 79% of patients died, whereas only 30% of patients died when penicillin was given alone in the same doses.

Many in-vitro studies of the action of penicillin and chloramphenicol in combination against a number of bacteria demonstrated antagonism, especially when the test organism was a gram-positive coccus; but others did not confirm this and some even revealed synergism. These conflicting observations probably result from the diversity of in-vitro methods and the variety of test organisms and from the different ways in which the experimental results were interpreted. The results of in-vivo experiments are also inconclusive. In the therapy of experimental infections in mice, these two agents were antagonistic when treatment was restricted to a single injection of the drugs [5,6]; but these single-dose experiments do not reproduce the conditions in which antibiotics are used clinically. Speck and Jawetz [7] reported that penicillin and chloramphenicol, administered daily by intraperitoneal injection for five days, were antagon-

1. Winnicott, D. W. The Child and the Outside World. London, 1957.
2. Taylor, S. *Lancet*, 1938, i, 759.
3. Jawetz, E., Gunnison, J. B. *J. Amer. med. Ass.* 1952, **150**, 693.
4. Lepper, M. H., Dowling, H. F. *Arch. intern. Med.* 1951, **88**, 489.
5. Jawetz, E., Gunnison, J. B., Speck, R. S., Coleman, V. R. *ibid.* 1951, **87**, 349.
6. Ahern, J. J., Burnell, J. M., Kirby, W. M. M. *Proc. Soc. exp. Biol., N.Y.* 1952, **79**, 568.
7. Speck, R. S., Jawetz, E. *Amer. J. med. Sci.* 1952, **223**, 280.

istic in the treatment of a subacute streptococcal infection induced in mice by the intramuscular injection of *Streptococcus pyogenes*. But when Ahern et al.[6] treated the infection produced in mice by the intraperitoneal injection of *Str. pyogenes* with parenteral penicillin and chloramphenicol in doses that maintained adequate blood-levels for two or three days, they observed no interference; the combination afforded the same degree of protection as penicillin alone. In a series of articles, Jones and Finland have attempted to evaluate the activity of two antibiotics in combination by determining the antibacterial activity of the plasma of healthy people at intervals after the drugs had been administered separately or together. We have referred to some of their earlier work,[8 9] and now Finland et al.[10] have tested phenoxymethyl penicillin and chloramphenicol in this way. Chloramphenicol did not interfere with the action of penicillin against three different gram-positive cocci—a group-A streptococcus, a type-2 pneumococcus, and a *Staph. aureus*—nor did it add measurably to the activity of the same dose of penicillin given alone. They concluded that the combination has probably no clinical significance.

Even if there is no untoward interaction between chloramphenicol and penicillin, it is difficult to envisage a legitimate clinical indication for prescribing these two drugs in combination.

ANAPHYLAXIS WITHOUT PREVIOUS SENSITISATION

THOSE who have to administer antitoxin are alive to the danger of anaphylactic shock in patients who may have become sensitised by previous treatment with antitoxin. Presumably in sensitised persons antibodies have been produced to serum-proteins present in the earlier dose of antitoxin, and the reaction of these antibodies with the protein in the subsequent dose of antitoxin gives rise to some toxic substance—possibly histamine—which may prove lethal unless adrenaline is administered promptly. The relation of anaphylaxis to allergy, the explanation of the toxic effect of the combining of antigen and antibody, and the site of the injury reaction are still mysteries. But anaphylactic reactions may be elicited in vitro, for smooth muscle such as strips of uterus or intestine from sensitised animals contracts when it is brought into contact with the specific antigen to which the animal is sensitive.[11] Not only does anaphylactic shock occur in animals previously sensitised with the antigen, but so-called " passive anaphylaxis " is observed when administration of antibody from another animal is followed after an interval by administration of the specific antigen. It has been suggested that the time interval before maximum sensitivity to passive anaphylaxis develops may represent the time necessary for fixation of antibody to tissue cells.[12]

A reasonable view therefore would be that anaphylactic shock is due to the union of antigen with antibody in or at the surface of tissue cells causing cell injury and leading to the production of a histamine-like toxic substance by the cell. On the other hand, acute shock in guineapigs can be elicited by injecting a mixture of antigen and antibody which have already been incubated together in vitro for a short time,[13] so it is not necessary for the antibody to be first anchored to the tissue cells before coming into contact with the specific antigen. This type of acute or even fatal reaction after injection of " toxified " serum is sometimes regarded as distinguishable from true anaphylaxis and is described as anaphylactoid shock. The severe shock in guineapigs produced by injecting soluble complexes of antigen and precipitating antibody [14] is presumably of this type. Recently [15] it has been found that injection into mice of soluble antigen-antibody complexes produces severe shock, the antigens used being bovine serum-albumin and *Hæmophilus pertussis* vaccine. In some cases the soluble complexes were prepared by adding an eightfold excess of antigen to the appropriate antibody; and in other experiments equivalent amounts of antigen and antibody were first mixed, and the resulting precipitate was washed and then dissolved by adding a tenfold excess of antigen. With the preparation from the washed antigen-antibody precipitate the mortality among the injected mice was lower. This suggests that the shock-producing factor may be formed when the antigen and antibody combine in vitro and is removed by washing the precipitate. It is perhaps significant that peptone shock produced by protein breakdown products closely resembles anaphylactic and anaphylactoid reactions.

8. *Lancet*, 1957, ii, 177.
9. *ibid.* p. 1207.
10. Finland, M., Pryles, C. V., Jones, W. F. *New Engl. J. Med.* 1958, **258**, 817.
11. Dakin, H. D., Dale, H. H. *Biochem. J.* 1919, **13**, 248.
12. Kabat, E. A., Benacerraf, B. *J. Immunol.* 1949, **62**, 97.
13. Friedemann, U. *Z. ImmunForsch.* 1909, **2**, 591.

IN ARDUIS FIDELIS

BY royal warrant of June 23, 1898, the Army Medical Staff was amalgamated with the Medical Staff Corps to form the Royal Army Medical Corps; and on Tuesday of last week the diamond jubilee of the Corps was celebrated with due magnificence at a service in Westminster Abbey attended by Queen Elizabeth the Queen Mother, colonel-in-chief. On the following day the British Medical Association, whose persistent pressure on Governments did so much to bring about the R.A.M.C.'s formation, gathered a large and notable audience in its great hall. There they had the rare experience of hearing a commemorative oration delivered by an orator—yet in an unassuming way that made it wholly delightful.

Sir Gordon Gordon-Taylor had qualified himself for the occasion first by graduating in classics at Aberdeen in the year when the R.A.M.C. was born, and secondly by his surgical service with the Army in France in the first world war—long before the second transformed him into an admiral. Having recalled some of the great but faraway figures of British military medicine, he spoke of the R.A.M.C.'s contribution to preventive medicine implied by four of the names carved outside the London School of Hygiene—Parkes, Leishman, Bruce, and Ross. Then he turned to the men he knew in France, bringing each to life for a moment by his memories. " The whole world is a tomb for heroic men "; and he told us how, the week before, he had paid another visit to Flanders, in the rain so characteristic of that country, and had stood beside the grave of Noel Chavasse, in the cemetery at Brandhoek, which lies exactly where Arthur Martin-Leake had the main dressing-station of his field ambulance. These two doctors both received the Victoria Cross twice. To the present members of the Corps he said that its great traditions are safe in their hands. " Fidelity is, next to courage, the loveliest virtue."

Prof. ANDRIJA STAMPAR, a former president of the Assembly of the World Health Organisation, died on June 25 at Zagreb.

At their meeting last month the Central Health Services Council re-elected Lord COHEN OF BIRKENHEAD as their chairman.

14. Germuth, F. G., McKinnon, G. E. *Bull. Johns Hopk. Hosp.* 1957, **101**, 137.
15. Tokuda, S., Weiser, R. S. *Science*, 1958, **127**, 1237.

Special Articles

CASE-WORK IN THE TEACHING OF PSYCHIATRY

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WRITING about the fragmentation of knowledge, a distinguished physician and teacher of medicine said:

"I sometimes feel when I listen to these eminent scientists that their arguments are all perfectly valid, except that they have forgotten one thing—that the subject of their improving exercises is a living, feeling, and, we hope, thinking human being . . . Nowadays, be it in medicine, be it in education, be it in political reform, there seems to be a tendency to forget the individual."

This observation of Pickering's (1955) about the medical student applies with even more force to the patient: the more advanced the physical methods of diagnosis the greater is the risk that the ill person will get lost in a welter of figures and charts and wave-recordings.

We describe here an experiment in the handling of ill and emotionally disturbed people by the student himself, under supervision by a senior. We believe that case-work of this kind can help in a practical way to prepare him for dealing with the patients he will meet in his professional life. We think it better that he should be exposed to this experience within the framework of a teaching hospital than in the rough and tumble of practice without adequate guidance.

In the clinical part of his training the student of medicine learns by observing his seniors at work, by reading, by listening to lectures, and by working with sick people. The degree of participation, or involvement, in his work is least when he is passively taking information in, and most when he is actively concerned in what is happening to the patient. Methods of teaching that encourage participation, such as the case-seminar with discussion, seem to engage the student's interest and enthusiasm more than the purely didactic methods, though in a balanced course both have their place. When patients are entrusted to his care, his attitude undergoes an important change: he moves over from being an observer of the art of medicine to being a participant, albeit in a subordinate role.

In the teaching of psychiatry two kinds of knowledge have to be imparted: (1) the syndromes of mental illness, major and minor, and their diagnosis and treatment; and (2) the understanding and management of a personal relationship between the doctor (or the doctor-in-training) and his patient. Case-work, as we use it, contributes a great deal to the second, but it does not take the place of systematic teaching in the first.

The ability to take a complete and meaningful history of the patient's illness calls for skill in interviewing, a skill which is of first importance in clinical medicine. This ability is one function of an effective doctor-patient relationship; it can be fostered through experience and discussion; and continued contact with the patient is here valuable, for it allows the novice to confirm, refute, or amplify his initial impressions. Direct questioning of the patient is not always the best approach. The student needs also to learn how to listen, when to comment, and when to keep silent, and how to evaluate what the patient says. Some patients require help to express their thoughts, and others ramble so much that a little direction has to be applied. Knowledge when to do one of these and when the other takes time to acquire. The attitude of the interviewer is important in determining the course of the interview, and with repeated interviews the student comes to see how this influence operates.

Method

The first step is that the student who wishes to know more about psychiatry comes to the outpatient clinic on the day when new patients are seen. This attendance is voluntary, and thus the students who have taken part in the experiment are a self-selected group. One, two, or three students (not more) "sit in" on the consultant's interviews with each patient. When the nature and the severity of the illness have been assessed by the consultant, and the patient has left the room, the case is discussed; if it seems suitable for handling by a student, one of those present may be asked whether he would like to take the patient on. At this point there is a "feeling-judgment" to be made; if the student feels unduly irritated or antagonised by the patient and his complaints, or unduly attracted, it will be prudent to decline. In his later career he will, of course, have to deal with patients of this kind, but it is unwise for him to begin his case-work with one of them. If he decides to accept, appointments are made for the patient to attend once a week during clinic hours, when the supervisor (the consultant or his deputy) is available.

Patients chosen for case-work fall into two broad classes:

(1) Those with anxiety states, or depression, or one of the common stress disorders, such as abdominal discontent. These can be helped, and often helped considerably, by regular interviews with ventilation of feeling and the working-through of personal problems.

(2) Those with an established illness, such as a paranoid state, which is not progressive. Patients in this category attend for observation; the student learns by observing them and reporting back to his supervisor. As a rule there is little else to be done, except when some environmental change is called for; this will be decided on after a conference with the social worker.

Perhaps from a third to a half of the patients coming to a psychiatric clinic can be assigned to a student. Where the illness is too massive or too complicated, or where there are special features which make the case unsuitable (e.g., homosexuality with much tension), the patient is dealt with in some other way. When the student undertakes to look after a patient he must see to it that his sessions in the clinic are kept free from other duties for a reasonable distance ahead—say two or three months.

The student is present on the patients' first attendance at the clinic and is introduced to them as a doctor-in-training: he is thus recognised as one of the team. The patient selected for case-work is asked whether he will agree to the consultant calling on the student for assistance in the handling of his case, and this agreement is always forthcoming, if the selection has been wise. The patient knows that he can always ask to see the consultant, or supervisor, again at any time; it is surprising, and instructive, to see how seldom this request is made.

Where the patient is having medication—say, with a sedative drug—and makes an inquiry about this at his interview with the student, he is told that the consultant's advice will be sought before any change is made. In general, drug therapy is kept to a minimum, or omitted altogether, during the course of case-work.

Supervision

Close supervision of the student's work is an essential part of the plan. His session with the patient will last 40–50 minutes; he may make notes at the time or write a summary of the conversation afterwards He then brings his notes directly to the supervisor, and the material of the session is discussed at some length. If there is a difficulty the patient may be brought back for a fresh appraisal by the supervisor. From the student's interview there will emerge (1) the present state of the patient, and how the illness is progressing, (2) further data about the emotional background of the illness, and (3) the reaction of the student to what the patient says and does; this is especially important.

During the supervisory sessions the aims of the departmental team in helping the patient are formulated. The tendency of the beginner is to strive for perfection, and to feel frustrated if a perfectly harmonious adjustment cannot be achieved. Discussion with the supervisor, and with his fellow-students, promotes a realistic assessment of what can and cannot be done.

Some direction by the supervisor of the student's activity will, of course, be necessary: this does not consist of a series of orders but rather a working-out by student and senior together of the best and most practicable way of handling each new situation as it arises. In the main the student's attitude will be neutral and cautious; he takes care to refrain from taking sides or being drawn into giving advice.

Termination of the case-work relationship does not seem to offer special difficulty. The rapport between the student and his patient is never allowed to become too intense, so that " weaning " is not attended by depression or a recurrence of illness. The patient retains his contact with the clinic and hence does not feel cut off and rejected.

Attitude of Student

Naturally at the outset the student is diffident—he is feeling his way. At this stage he is advised to say as little as possible; his main task is listening, not talking, and he must strive to adopt a sympathetic, attentive, non-critical attitude which will encourage the patient to unburden himself. In the opening phase of his work with patients the student commonly feels mildly guilty. He feels that he is " only a student ", and wonders if it is fair for the patient to be seen by him and not by a qualified doctor. He soon comes to see, however, that the patient generally benefits from their sessions together, and that his own professional status is less important than the qualities of personality he can bring into the situation. His feelings of guilt and inadequacy should be brought out into the open as soon as they appear and freely discussed: he can be shown readily enough that he is putting into the patient-relationship at least as much as he is getting out of it.

Another common reaction is one of discouragement at the slow rate of progress in the illness—e.g., a long-standing anxiety depression. From this he begins to learn how to tolerate patients who get better slowly, or perhaps do not progress at all, and that the determining causes of improvement, or lack of improvement, are much more in the patient than in him. He learns that every illness, and every human relationship, has its ups and downs; and he takes a more objective view of the downs. The student is never given a patient with whom he feels entirely out of sympathy; he is free to refuse the case if the patient is much older than himself, or perhaps too close to him in age, or if he feels that he might get entangled in the patient's problems, or for any similar reason.

The possibility of entanglement with the patient is sometimes advanced as an objection to case-work, but in practice it is very rare. One of us, who has used and tested out this method of teaching over a number of years, has come across no untoward consequences for the patient or the student (O'Neill 1955). Occasionally the student will become overinterested in or overconcerned with his patient, but with regular and close supervision this can easily be dealt with. The student's lack of experience of medicine and of life is in our view offset by the fact that he is, apart from examinations, under much less heavy personal pressure than the overworked general practitioner.

Case-work should remain a voluntary activity. It would be unwise and profitless to make this part of his teaching obligatory. The student who is keen to learn will ask for it; the others should not be compelled, and, if they were, would learn nothing and perhaps become anxious and resistant.

Role of Social Worker

The student who is looking after a patient has access to all the services of the department, and can, if need be, call on the psychiatric social worker to see members of the patient's family, or to advise and help with practical social problems. Our practice is that the case is thoroughly discussed by the student, the consultant, and the social worker in conference before the referral is made; in this way the role to be taken by each is defined and understood, and there is no overlapping. After the social worker's interview she will discuss her findings with the student or in conference. It is a valuable experience for the student to join in a team with workers in other disciplines; he can observe the social worker's approach and learn from her about the importance of family setting, housing conditions, problems of adaptation to a new culture, and the other determinants of illness which are her special province.

Objections and Advantages

Some of the risks and objections have been dealt with above. One theoretical objection is that the kind of student who is attracted to case-work in psychiatry is likely to be a " neurotic " person seeking therapy for himself. On the contrary, the students who apply to have patients of their own include some of the most mature and intelligent of their year.

It has been suggested that the medical student may become confused or embarrassed when the patient tries to discuss sexual problems. We have not found that this presents any real difficulty, provided that the topics of discussion at the interview are worked through with the supervisor, and the student's own feelings about them are given some outlet. A feeling-tone of shame or embarrassment in the interview situation, if it should become noticeable, can be taken up and analysed objectively. It goes without saying that sexual conflict is an important contributory cause of the illnesses that bring patients to

the clinic, and knowing something of how to deal with these is a valuable asset to the doctor going out into the world.

We have students in their first clinical year, and students in their third year, taking part in case-work. There is little to choose in degree of competence, or in emotional reaction, between the two. The most important differences are not in terms of phase of clinical progress, but in terms of disposition and attitude. In terms of benefit to the patient, the first-year men do just as well. What seems to count, in the case-work situation, is less a formal knowledge of psychiatry or medicine than qualities of personality and motivation.

The main advantage of case-work is that it gives the student more confidence and more insight, and better comprehension of the diversity and complexity of human illness. He becomes more receptive to the " undertones " of communication—" reading between the lines ", as a patient once put it. He learns, too, about his own reactions to the ill person, and how these can be recognised and tolerated without threatening his relation with the patient. He learns how to handle without agitation the patient who is openly hostile; the patient who is unduly demanding, or theatrical, or flirtatious; the patient who seeks to manipulate the staff of the clinic for his own ends. In short, he learns how people behave when they are ill and anxious, and how the illness may be utilised for gain.

Open Questions

Of course, there are questions about the place of case-work in the teaching of psychiatry which await answers. One such is: what is the most appropriate place for it in the curriculum—which of the clinical years? What reading, if any, should be done? There is an argument against absorbing much textbook material before embarking on case-work; that it tends to set up in the student's mind preconceptions about what he should find, and that it tends to foster an " intellectualising " of the task, with the result that the student looks for security in lists and rules rather than in his own judgments of feeling.

What is the place of the formal lecture? Our experience has been that lectures, when not illustrated by demonstration of a patient, make less impact on the student's mind than seminars, or teaching with the aid of the one-way screen (Millar 1954). As Millar said, " Meaning must be given to the complex by the simple; to the abstract by the concrete; to generalities by particulars; to concepts by percepts."

Illustrative Case-reports

One example of a successful outcome in the handling of a patient with several stress disorders by a student has been published already (Goldman 1955). Other examples are given here.

Case 1.—An engineering office worker, aged 27, was an anxious man with palpitations, vomiting, spots before eyes, and a dry skin. He was seen in the outpatient department over four months (fifteen sessions). The youngest of seven children, he had been reared in Eire and given no instruction about sex. His symptoms appeared only when he was alone or visited a cinema or a church. During his sessions at the clinic there gradually came to light strong feelings of guilt over masturbation and nocturnal emissions in adolescence; all this time he believed himself to be oversexed. He said that he had been worried about this for a long time, and wanted to get it off his chest. After the last session he was much less anxious and preoccupied with his symptoms. A few months later he was cheerful and confident and had no complaints.

Case 2.—A secretary, aged 16, complained chiefly of feelings of unreality, depression, and fear of death. She had attended the clinic weekly for about three months and was still attending. Her parents have never got on well, and she was on bad terms with her father—he is " always finding fault, and enjoys arguments ". She cannot resist an argument either. She was inclined to blame her father for the scenes, and to minimise her own part in them. She has been going out with boys since she was 11 years old and has no other real interests. She indulges in very heavy petting but always stops short of intercourse—she becomes very much aroused but gets frightened. One aim of discussion during her sessions has been to improve her relations with her father and promote insight into her own behaviour with him. She has also come to recognise how excessive erotic stimulation can provoke tension. She is now less depressed, and her sleep is much sounder; the unreality feelings are still present, but she is less concerned about them.

Other Studies of Case-work in Teaching

Houston and Allen (1957) describe a clinical programme for second-year students in the department of psychiatry of the University of California.

Each student is assigned one psychiatric patient with whom he works voluntarily in his own time in the outpatient department. The patient is seen in weekly one-hour interviews through most of the academic year. Supervisors are drawn from residents, fellows, and junior psychiatrists; one of these devotes an hour to the student each week. " Orientation meetings " are held to discuss the various questions which emerge from the students' work with patients. Houston and Allen comment that the supervisors were often surprised at how well the student had done, and felt humble on comparing the student's performance in the doctor-patient relationship with that of a novice clinician in any field.

Coleman (1951) says: " The objective of psychiatric teaching is to turn out better doctors, not better psychiatrists."

In his department in the University of Colorado two students work as a team in the pædiatric outpatient clinic, one student seeing the mother, and the other the child. The interviews are then fully discussed with the psychiatrist. The student, as Coleman says, learns to use his own personality resources. He believes that it is much easier to teach medical students than graduate residents; the attitudes of the qualified doctor towards the handling of the disturbed patient are already becoming fixed, whereas the attitudes of the student are still being formed.

Comments

Balint (1957) said: " Illness is a fruitless struggle by the patient to resolve his conflicts; therapy is an attempt by the doctor to intervene in this dynamic process so that a better equilibrium can be attained." The knowledge which the student must acquire if he is to become a fully effective doctor Balint has named " the pathology of the whole person " In this new pathology there must be, as he says, a long chapter devoted to the most important therapeutic agent, the relationship between the patient and his doctor. We consider that case-work by the student will give him insight into this all-important relationship that is unlikely to come by reading and observation alone.

Preparation of the student for dealing with disorders of emotional origin is of particular importance for those who intend to work in urban communities. Finlay et al. (1954) estimated that in an urban practice one patient in five who call upon the doctor does so because of a stress disorder.

The attitude of the public in general, and of medical students, towards the psychological aspect of illness is changing. Suspicion and ridicule are giving place to curiosity, active interest, and a willingness to devote time and trouble to study and work in this field. The student is under some handicap when he first comes to deal with patients during his training. His natural and human approach to the sick person tends to become overlaid by the attitudes which preclinical teaching may beget—especially an overvaluation of the physical aspects of causation of disease. Case-work brings him back into full contact with his chief object of study—the person who is ill. It helps him to place the biophysics and biochemistry of medicine in proper perspective.

Summary

One method of teaching in psychiatry is the handling of ill and emotionally disturbed people by the medical student himself under supervision.

Its advantages and possible hazards are appraised.

It offers the student an opportunity for gaining confidence, and insight into the meaning of illness, that may not be so readily acquired in other ways.

We are indebted to Prof. W. S. Peart for his interest and help in the preparation of this paper, and to Miss Dorothy Asbury for her contribution to discussions.

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SENIOR REGISTRARS

THE Ministry of Health has outlined arrangements [1] for the selection of some posts without limit of tenure for senior registrars who have finished their training and have not yet obtained higher appointments.[2]

Hospital authorities are asked to submit proposals for designating some senior-registrar posts which will provide responsible work commensurate with that normally expected of a fourth-year senior registrar, and which are within the present total of senior registrars. The new posts "must not be regarded as a substitute for additional consultant posts", and the senior registrars selected will be free to continue to compete for higher appointments.

"In the course of their review of senior registrar posts, Boards may well find that there are posts held by time expired senior registrars which should be held by part-time or whole-time consultants. Such findings should be reported with the proposals in respect of special posts."

The Minister will be advised on the proposals by the professional committee which advises him on consultant appointments. The future use of posts of this type will depend on the outcome of the study by the working party on medical staffing structure in the hospital service.[2]

In filling posts whose designation is approved by the Minister, boards should consider applications only from senior registrars who have completed their four years of training. The posts should be advertised, except where the board, after taking account of the advice of its medical advisory committee, is satisfied that the present occupant of the post is the best candidate that would be likely to come forward if the post were advertised. Appointments will be of unspecified duration, but the need for the continued existence of a post will be open to review when it falls vacant. Remuneration is to be announced later.

1. H.M. (58) 58.
2. See *Lancet*, 1957, i, 906.

Before Our Time

THE AUTOBIOGRAPHY OF CHARLES DARWIN *

Charles Darwin's autobiography is a true testament of science, and, although it contains cautionary elements for those endowed with genius and a passion for discovery, it is nevertheless inspiring reading for the young scientist. It is a plain record of the life and work of a man who ranks with Newton as the most important of English scientists. Charles Darwin told the truth about himself as he saw it, as all diarists and autobiographers must if they wish their records to endure.

James Boswell told the whole truth about himself, shamelessly and tediously, because anything that happened to him, James Boswell, was important and worthy of record. "Jamie, Jamie," said his father, Lord Auchinleck, sadly, "if ye sullied your breeches ye'd tell the world." Edward Gibbon told the truth about himself (perhaps not the whole truth) because this was the lifelong habit of the historian. Charles Darwin had a still higher standard of accurate reporting; for his training, unlike the historian's, was to record the facts elicited by personal observation and experiment.

The interest of the subject and the accuracy of the record give it a high place among English autobiographies. Although there is in his prose no rhythm and no eloquence, the plain style well matches the simple story. He records the ordinary happenings of any man's life with a simplicity which amounts to naiveté. For example, of his life in Cambridge as an undergraduate he wrote:

"We sometimes drank too much, with jolly singing and playing cards afterwards. I know that I ought to feel ashamed of days and evenings thus spent, but as some of my friends were very pleasant and we were all in the highest spirits I cannot help looking back to these times with much pleasure . . ."

Charles Darwin had no insight into his own personality or into the nature of his chronic invalidism, but his story is told so frankly and so ingenuously that the instructed reader can today learn more of Charles Darwin than he knew of himself.

The autobiography was written for his family in 1876; but since it was written at the instance of a German editor, even the modest Charles must have expected that it would one day be published, as indeed it was five years after his death, in the *Life and Letters of Charles Darwin*, edited by his son, Sir Francis Darwin. Some passages were then omitted either because they were too harsh in their criticism of individuals, or too frank in their statement of Darwin's views on religion. The autobiography was republished here in 1929 and again in America in 1950, but it has not recently been readily available in this

* The Autobiography of Charles Darwin. Edited by his granddaughter NORA BARLOW. London: Collins. 1958. Pp. 253. 16s.

country, and although the personality and work of Charles Darwin have been given great attention in the past twenty years, the autobiography has not been widely read.

Lady Barlow has then done well to give us a full and accurate transcript of the manuscript which is now in the Cambridge University Library. The restored passages contain nearly 10,000 words and, although they neither enlarge nor correct for us the portrait of Charles Darwin, it is highly satisfactory to have at last the complete text.

It is to be hoped that this reprint, together with the chapter written by Sir Francis Darwin concerning his father's personality and method of work, will soon find a place in one of the cheap editions of the classics. This is the first time, I think, that the Autobiography has been published without the complementary reminiscences of his son, and the loss is great.

This omission must have been the result of considered editorial policy; but it clearly demonstrates that Charles related only half the tale and Francis, with the skill of an artist tempered by the affection of a devoted son, told the rest. In partial compensation we are given several appendices covering 100 pages, including an essay on Charles' attitude to his grandfather, Dr. Erasmus Darwin, and another on his controversy with Samuel Butler.

* * *

The outline of the story told in the Autobiography is well known, even by those who have not read it. In it Darwin describes the slow growth of his scientific passion; before he joined the *Beagle* on her five-year voyage his geological studies had begun, but of this time he writes "I should have thought myself mad to give up the first days of partridge-shooting for geology or any other science". After his return to England and his marriage to Emma Wedgwood his research gradually excluded all other interests, except his love for his wife and children. Social life, shooting, literature, music, the meeting of scientific societies, the cultivation of friendship—all these were excluded as the formulation and proof of the great hypotheses increasingly filled his mind. The night brought no escape, with its reiteration of the doings of the day and its plans for the morrow; but relief by day was provided by the newspaper, which he read for himself, and by novels which were read to him each day for an hour and a half by the devoted Emma, who also accompanied him each evening in two games of backgammon. When I wrote in *The Lancet* in 1943 that "four hours' work in the daytime sufficed for the performance of the most important scientific work of the nineteenth century", Sir Arthur Keith wrote to me pointing out that "Darwin's brain was a broody fowl—always sitting on a brood—a 24 hour day, not 4 hours!"

Inherited wealth and chronic ill health were the begetters of this situation so fortunate for science; a situation impossible either for the children of the poor or for the healthy—at least if they carry the burden of guilt which afflicted the sensitive conscience of Charles Darwin. The shawl, which was usually draped over his shoulders, became both for him and his children the badge of invalidism—a distress signal to which the family gave unquestioning and ready response. And the cause of his illness? An autonomic disorder, bred, like other autonomic disorders, by Constitution out of Environment, conceived and nourished by the guilt which resulted from his suppressed hostility to that godlike being his father—all-wise, all-kind, omniscient and omnipotent.

* * *

It was a curious fate that brought this prototype father-idolater into conflict with that prototype father-hater, Samuel Butler. The aggressive expression of Samuel's hatred of Canon Butler did not mitigate his violence towards any other father-figure who treated him with contempt; and Charles' unawareness of his hostility to his own father did not reduce his sensitivity to criticism nor diminish a guilty son's need for consolation and security when attacked. Charles had been at school at Shrewsbury with Samuel's father and an undergraduate with him at Cambridge. Samuel was more than an acquaintance, he had also been a professed admirer of Darwin's scientific work, and it was not until 1877 with the publication of *Life and Habit* that he became openly critical of Darwinism. Charles disdained an adversary whose arguments were not founded on scientific fact; but he could not understand, as he wrote to Huxley, why Butler was "so bitter against" him. How could he know, or indeed care, that he had become an offending father-figure for a rebellious son?

The quarrel arose after the publication in 1879 of Charles' *Life of Erasmus Darwin*, which contained a translation of an essay by Ernest Krause which had originally appeared in the German scientific journal, *Kosmos*. While the book was in preparation Charles sent Krause a copy of Samuel Butler's *Evolution Old and New*, which had just been published, with the hope "that he would not expend much powder and shot on Mr. Butler as he really is not worthy of it. His work is merely ephemeral." Krause revised his article and included critical references to the views of Butler, although not mentioning him by name. When the *Life of Erasmus Darwin* was published there was no indication that the original article had been revised or by whom and, worse still, there was a footnote in the preface stating that Mr. Butler's book *Evolution Old and New* had appeared since Dr. Krause's article was published. Butler asked Darwin for an explanation; Darwin replied that "this is so common a practice that it never occurred to me to state that the article had been modified." Butler, unsatisfied, stated his grievance in a letter to the *Athenæum*. Darwin then remembered what he had forgotten, that he had indeed written a paragraph for inclusion in his book stating that Krause had revised this article; remembered then, too, that at Krause's instance, he had caused this paragraph to be omitted; and perhaps did not recognise, even then, that his footnote to the preface would justify a charge of duplicity by the inflammable Butler.

Comfort in this assault by the unspeakable Butler was provided by the family in no ordinary degree. As Lady Barlow relates, "the exchange of letters to and from Down, some of which were sent to London by road in the Down carriage, with John the coachman waiting to bring back the answers shows how serious was the flutter in the Darwin Dove-cot". Should Charles admit his error and rebut the charge of duplicity or should he ignore contemptuously the "nearly insane" ravings of a scribbler? He was persuaded by the majority of his family and by his powerful friends (Huxley and Leslie Stephen) not to sally forth from his ivory tower; but some of his sons, including the wise and unimpassioned Francis, gave him better advice which was unfortunately rejected. So Butler's resentment smouldered on in his aggressive breast, and although the fires were temporarily damped down by Darwin's death, he himself was to die unaware of the truth.

If these lapses of memory were examples of the provocative art of forgetting, yet another example of Charles curious forgetfulness is given by Lady Barlow. Charles in his autobiography gave the year of his father's death as 1847; it was in fact 1848.

* * *

The edition of the autobiography published in 1929 in the Thinker's Library omitted the pages relating to Robert Waring Darwin, Charles' father. This long

passage was, of course, included in the *Life and Letters*, and is now restored by Lady Barlow to its proper place. In Sir Francis Darwin's edition the word " father " is printed with a small f as has been customary in English writing for many a day, the capital F being reserved for the divine Father. In Lady Barlow's edition, which she tells us is an accurate transcript, there is a strange indecision about the usage of F and f. The word father appears 70 times in reference to Robert: 49 times it is given a small f and 21 times a capital F. Occasionally the variation appears to be symbolic of Charles' ambivalent attitude to his father: " My father heard his reasons for believing that he could ultimately repay the money, and from my Father's intuitive perception of character felt sure that he was to be trusted." All fathers hear but only godlike Fathers have an intuitive comprehension.

Lady Barlow has a thorough understanding of Darwin's scientific work and in an interesting chapter in the appendix she discusses it not only in relation to the ideas of the pioneers of evolutionary thought, Erasmus Darwin and Lamarck, but also in relation to contemporary thinking. Charles denied that evolutionary ideas were " in the air " while he was at work accumulating the evidence by which in 1859 he convinced the scientific world of the truth of evolution by natural selection. Lady Barlow shows by extracts from contemporary writers that Charles, virtually excluded from social contacts, was in some degree unaware of the scientific small-talk of the day. However, he was correct in the certainty that he alone had the innumerable facts, patiently collected for more than twenty years, to establish the great hypothesis which, in the event, he and Wallace were to publish simultaneously.

Darwin was always interested in the comparative part which theory and the ascertainment of fact by observation and experiment play in scientific research, the balance between the conception of a hypothesis and its proof. In his youth the emphasis was all on the accumulation of facts: " as a young man his suspicion of the speculative philosopher was unqualified; in later years he acknowledged a growing respect for speculation." Lady Barlow suggests that this youthful revolt against the speculation of which both his father and his grandfather were overfond was an act which proclaimed his emancipation from the dominating personality of his father.

DOUGLAS HUBBLE.

THE COSTE OF PRESCRYBINGE

ONE of the recommendations made in the interim report of the Hinchliffe Committee on the Cost of Prescribing is that all doctors should be issued with a list of available drugs and their prices.

This would be by no means the first time that a priced list of drugs has been issued. One was published two hundred and fifty years ago by Dr. R. Pitt, fellow and censor of the Royal College of Physicians, under the title of *The Craft and Frauds of Physic Exposed. The very low Prices of the best Medicines Discovered. The Costly Medicines now in Greatest Esteem . . . and the too frequent Use of Physic proved destructive to Health with instructions to Prevent being cheated and destroy'd by the prevailing Practice.* Printed in London by Tim. Childe, at the White-Hart in St. Paul's Church-yard 1703. It is a model of what is required.

Dr. Pitt began by stating that both rich and poor " are piliaged of all their substance in every sickness by the excessive rates of their physic ". Two or three cheap remedies are mixed together and charged for at ten or twenty times their value. The public are warned against buying much advertised nostrums.

" You covet the Treacle of Venice from the Merchant and you purchase the Goa stone from the forest hand. You have often been deceived in the operation of the physic thro' great assurances of its wondrous efficacy."

He pours scorn on the expensive unethical Bezoar stone stated by its purveyors to be a certain cure for any form of poisoning and for any malignant distemper. He states that powdered oyster shells and crabs' eyes are sold as the much vaunted powdered pearl, a substance stated " to revive the blood as it pleases the eye ".

He criticises those physicians who

" thrust into the stomach of their patients not only the most loathsom but the parts of animals which after death are void of all spirits or oyls and are a dry and inactive earth "—for example, powdered mummy and powdered viper—" and what can you think will be the success from the use of the nest of a swallow or the cast-off skin of a serpent ?"

Having dealt with unethical prescriptions, Dr. Pitt pleads for the rational use of drugs on a physiological basis (as far as he was able to at that time). When acid abounds in the stomach he advises the use of alkali powders or alkali earths or animal parts calcined. Then follows a list of simples with their current prices:

" In the following catalogue the herbs being mostly of english growth it is unnecessary to repeat the price but once for all to tell you that they are commonly sold for one penny or less the handful."

Here are some extracts from his price list:

" The Purgers: *Manna* at eight pence the ounce, the common dose is double that quantity and is the dearest medicine us'd in physic. *Cassia* fourpence the ounce. *Aloes* after it is prepared or cleansed with rose-water (or spring-water to as good purpose) is one penny the dose. *Senna* at six pence the ounce when taken in powder makes the dose less than one penny."

" *Jalap* at one penny the dram makes three doses."

" The Laudanum pills of one or two grains are of the lowest value making the expence of two farthings."

" The Tincture of opium or liquid laudanum with Spirit of Wine or Canary are of the value of one shilling the ounce and of a penny the dose."

" Extract of the Bark is sixpence the dose."

" You may place yourselves at the proper distance and cast your eyes upon all these instruments of Life. They are cheap enough to be given to the poor."

Then follows a list of about one hundred priced prescriptions:

" Millepedes, gum ammoniac, flower of benjamin, saffron powdered with balsam of Peru, made up into a mass of pills with common balsam of sulphur to be used in chronical and scrophulous cough. The dose may be valued at two pence."

" Purging Potion. Jalap root, powdered ginger, creme of tartar in white wine with syrup of buckthorn. Worth two pence besides the wine."

" The decoction of the Jesuit's powder:—Two ounces of it to be boiled in three pints of water to a quart, with three drams of balsam of Tolu and half a dram of cochineal. This may cure the ague at the expence of two shillings."

Drugs may not have worked wonders in those days, but they were cheap.

W. B.

Personal Papers

THE VISITING-LIST

As others have done before, our medical dining-club at its February meeting discussed the future of general practice. We all have views on this (we are an enlightened lot); but perhaps it's a bit late in the day to expect any very novel opinions on this familiar subject. What did startle us was a small collection of *facts* which came out almost accidentally near the end. After we'd been talking for some time about what practitioners do, and what they ought to do, someone turned to the family doctor who'd opened the proceedings and said: "Tell us what *you* did today. What kind of patients did you see?" So he produced his visiting-list, and it surprised us. Since it may surprise others, I asked him for a copy of it, with his remarks as he gave them to us. Here it is:

1. *Varicose ulcer* in a filthy man over 70. No hope of improving the dirty house.
2. *Acute bronchitis.*—Woman of 74. Lives alone, dependent on neighbours. One hour's domestic help daily.
3. *Aortic regurgitation.*—Man over 70. Arteriosclerosis.
4. *Cerebral thrombosis.*—Man over 80, nursed by wife also over 80.
5. *Furuncle of ear.*—Woman in great pain and distress.
6. *Carcinoma of vulva.*—Recurrence after removal of vulva.
7. *Acute bronchitis* in a middle-aged man with pulmonary tuberculosis.
8. *Tonsillitis* in a child.
9. *Mumps* in a middle-aged woman.
10. *Influenza* in a young man.
11. *Hæmatemesis* in an imbecile. Uncooperative young man, with spastic diplegia, treated at home.
12. *Lumbago* in an Army officer. To be X-rayed. (?) disc lesion.
13. *Loss of voice* in a schoolgirl. Probably simple laryngitis, to be referred to E.N.T. specialist if no improvement in two weeks.
14. *Root pain from osteoporosis* in a woman over 80.
15. *Hæmorrhage* in a young pregnant woman. Admitted to hospital with premature labour.
16. *Gangrene of finger* following crush injury. Woman over 80.
17. *Acute bronchiolitis* in two children.
18. *Acute bronchiolitis* in a child.
19. *Acute bronchiolitis* in a child.
20. *Secondary carcinoma of liver.*—Resection of rectum three years ago. Ascites and œdema of feet. Difficult case to manage.
21. *Acute bronchiolitis* in a child.
22. *Cardiac failure* in a man of 79 looked after by his wife, herself a certifiable melancholic.
23. *Pain*, from defective peripheral circulation, in a man of 79.
24. *Antenatal examination.*
25. *Incarcerated hernia* in a woman over 80 with senile confusion. Reduction.
26. *Rheumatoid arthritis.*—This woman also has auricular fibrillation.
27. *Sore throat.*—A schoolgirl with pharyngitis.
28. *Hypertension and chronic bronchitis* in a middle-aged man.
29. *Diphtheria immunisation.*—Child's mother could not bring him to surgery.
30. *Cut hand.*—Man of 87 fell and cut his hand. Five stitches.
31. *Acute bronchiolitis* in a child.
32. *Gastroenteritis* in a baby—12 miles from the surgery.
33. *Laryngitis* in a woman.

Unusually heavy? About average, he said, for the time of year—there are four doctors in the practice, with about 9000 National Health Service patients and three appointments: a garrison, a prison, and a factory. February saw the tail of an outbreak of bronchiolitis in young children, which accounts for 6 of those on the list.

But of course what is chiefly striking about these patients is that so many of them were old, that so many of them were gravely ill (having passed beyond hope of hospital cure), and that almost all were treated at home—the only one admitted to hospital being the young woman in premature labour, who had already been booked. Thanks to consultant opinions and the practitioners' own free access to pathology and X-rays, there was a diagnosis in every case, and this must sometimes have reduced the need for admission.

I have never thought it true that the practitioner in this country is forced by circumstances into becoming no more than a clerk and certificator; and now I shall be rather more sceptical when people tell me that general practice concerns itself only with minor illness. You too perhaps? F.

Congresses

FLOW OF BLOOD IN RELATION TO VESSEL WALL

A MEETING, sponsored by the clinical research committee of Charing Cross Hospital, to discuss the flow of blood in relation to the vessel wall, was held on June 13 at the Charing Cross Hospital Medical School.

Opening the conference, Mr. N. C. LAKE, the chairman, said that it was the first ever devoted exclusively to hæmorheology. Although any addition to medical jargon was to be deplored the title "hæmorheology" was justified, for the subject was a vast one of rapidly increasing importance. (Hæmorheology is a term introduced by Copley [1] and defined as covering "the deformation and flow—i.e., rheological—properties of cellular and plasmatic components of blood in macroscopic, microscopic and sub-microscopic dimensions and the rheological properties of vessel structure with which blood comes in direct contact".) Extensions in cardiac and vascular surgery had raised fresh questions which demanded an answer, and the growing incidence of cerebral and cardiac vascular lesions presented new problems for the physicians. He then gave examples of the ways in which rheological studies might aid the clinician in his practical work, finally quoting from the preface to James Parkinson's *Essay on the Shaking Palsy* (1817): "That these friends to humanity and medical science, who have already unveiled to us many of the morbid processes by which health and life is abridged, might be excited to extend their researches to this malady, is much to be desired . . ."—a mandate to all research-workers.

Dr. G. W. SCOTT BLAIR (Reading), a rheologist, surveyed work on the flow of suspensions through tubes with special reference to blood. He pointed out that during the past thirty years two groups of workers have been studying certain deviations from Poiseuille's law of flow almost completely independently of each other. Particularly Fahræus and his school in Sweden have worked on blood, whereas many rheologists in quite other fields (e.g., paints, clays, plastics) have pursued independent investigations with no knowledge of blood. Only recently have the two lines of investigation converged, with much mutual benefit.

Dr. A. L. COPLEY (Medical Research Laboratories, Charing Cross Hospital) reported on studies of adherence and viscosity of blood, plasma, and serum in contact with surfaces foreign to blood and with fibrin surfaces. His investigations were based on the observations of the plasmatic zone in the living blood-vessel, already known to Malpighi in the 17th century but

1. Copley, A. L. *J. Colloid Sci.* 1952, **7**, 323.

studied experimentally by Poiseuille in the 1830s. He described experiments with two types of viscometer for studies of apparent viscosity and of adherence. The results depended on the nature of the surfaces, the temperature, the rates of shear, and other conditions. Since viscosity studies have been made in the past in glass tubes, his findings, especially on fibrin-coated tubes, appear of particular interest. According to his concept blood-vessels have a fine porous endoendothelial lining of fibrin, probably a calcium fibrinate, which is produced and maintained continuously throughout life. The existence of an immobile or nearly immobile layer would insure that micro-coagulation processes, such as fibrin deposition and fibrinolysis, as well as other reactions could take place undisturbed on the vessel wall. The widely divergent results from blood systems in contact with various surfaces emphasise the importance of knowledge of the nature of the inner lining of blood-vessels. The formation of an immobile layer along the wall of the tube through which the material is flowing, " wall adherence," has not hitherto been studied with blood systems. This adherent layer may be compared with the immobile portion of the marginal plasmatic zone in the living blood-vessel postulated by Poiseuille. From his studies on apparent viscosity and wall adherence, Dr. Copley concluded that the proposed endo-endothelial fibrin film may play a part in regulating the width of the immobile layer and constitute a major factor in aiding circulation by increasing the velocity of blood-flow.

Dr. P. H. STAPLE (Medical Research Laboratories, Charing Cross Hospital) presented a paper jointly with Dr. A. L. COPLEY on biomicroscopic observations of the plasmatic zone in the capillary beds of frogs and Syrian and Chinese hamsters. These workers have developed a new method for producing graded variations in the velocity of blood-flow in small vessels. This method enabled many of Poiseuille's observations to be confirmed for the first time. Furthermore, by the injection of graphite suspensions or of a dye, they were able to establish in the capillary bed of the Chinese hamster's cheek pouch the existence of an immobile layer in contact with the vessel wall as predicted by Poiseuille for blood flowing in vivo.

Dr. G. W. SCOTT BLAIR opened the discussion on the rheological interpretations of the foregoing papers. He discussed the meaning to be attached to the term " viscosity " in blood systems. He saw no objection to defining viscosity as shear stress divided by rate of shear, even when this ratio is not constant, provided that this fact is specifically stated.

Prof. K. WEISSENBERG (Cambridge), a rheologist, discussed the many possible kinds of turbulence and of dilatancy, both of which phenomena have been observed in flowing blood. He also stressed the very large number of possible anomalies of flow.

Other speakers pointed out that the presence of adherent layers found behind a column flowing down a tilted tube do not necessarily prove the existence of such layers in full tubes. In reply, Dr. COPLEY pointed out that the in-vivo evidence was, in itself, conclusive.

Prof. M. H. KNISELY (Charleston, U.S.A.) read a paper on observations of the settling of blood-cell masses to the lower sides of vessels of animals and men during pathologic conditions, which was illustrated by a colour motion picture, taken through a horizontally aimed microscope. This most fascinating film showed clearly that there was a pronounced gravitational settlement of red cells in vivo, so that of two vertically disposed branches of a vessel the upper might contain pure plasma while the lower was choked by a mass of cells. This novel observation, which demands further study, has important pathological implications. Professor Knisely claimed that in some cases it seemed most probable that blood-cell masses settle in great numbers and become stationary long before the death of the subject, which they help to cause.

In closing the meeting, the CHAIRMAN said that he was delighted that so many participants from all over the country and some from abroad had attended. He expressed the hope that further meetings on hæmorheology would be organised in other centres.

The rheological aspects of the conference are to be reported in *Nature*.

In England Now

A Running Commentary by Peripatetic Correspondents

WELL, it's all over at last and we're back to normal. There were those of us, mind you, that actually enjoyed the bus strike, and we're a bit sad to have these great red bloated monsters edging us over the white line as in days of yore. No longer can we pull up our saloon at bus stops and see it filled delightfully with typists, models, apprentice actresses, or, earlier in the day, charwomen, keeping a score of Cars They Have Ridden In, who proudly told us of the Rolls with chauffeur that took no less than 12 of them right into the City. My holiest load was a Sister of Mercy hotfoot with Inj. Streptomycin, who packed her voluminous robes into the front seat and, for some inexplicable reason, a small roll of lino in the back (for some ceremonial purpose?). Such was her aura of sanctity that I found myself three miles off my road at her destination without quite realising it: but she did invite me back to her mission for coffee. Now the strike is over, to offer a lift, though in all Christian charity, might be interpreted as carrying a dark nefarious purpose: folk that last week wrestled with each other to squeeze in at my rear door would now fly screaming and dial 999.

I'm afraid of these buses now, too. Will the animosity towards private lift-givers, built up over the weeks, lead some irascible busman to ram his livid half-inch armour-plated giant into my frail craft? Perhaps I should buy a pair of spectacles and try to look like Mr. Cousins. And another thing—I've lost a good excuse for being late: It's a peculiarity of mine that my " psychostat " is set just five minutes after everyone else's, which means stumbling over knees at lectures and creeping silently into ward rounds behind the treatment trolley. With the magic words " No bus " all was forgiven; if they knew I had a car the password was " shocking jam ". Now I've got to fall back on sand in the carburettor and the kids being ill.

But, then, I must stop thinking hard thoughts about the busmen, bless them; after all, don't *I* have a pay dispute coming up any day now?

* * *

I had been admitted for what is euphemistically called a minor operation, and I could not have been better looked after. The surgeon was skilful, attentive, and kind, Sister was charming, her nurses highly decorative.

The little staff nurse was particularly sweet, but we had a few moments of difficulty when she brought me my first meal in hospital; it was the usual assortment of meat and vegetables and I was just about to start when she returned, in some confusion. " I'm sorry," she said, " but I'm afraid I shall have to take that away again, you're not supposed to be eating it—after all, you are a hæmorrhoid, aren't you? "

Thus, in later years, do we flinch once again under the terms of abuse of our student days; time alters many things but, clearly, to the perceptive observer, character—despite added weight and dignity—does not change.

* * *

Queueing for the gallery to see the Moscow Arts Theatre was an entertainment in itself. A pleasant, moderately shabby man who joined the queue just behind us started a conversation at once, as though we were old friends. We kept our end up pretty well for a time, but quickly got out of our depth as it became evident that he spent every evening of the week in queues and had seen everything in London worth mentioning, as soon as it opened, for several years back. I wondered how he earned his living; teaching in a progressive school, perhaps, or could he be a " resting " actor? Two hardbitten, theatrically orientated women behind him entered the discussion uninvited and completed our annihilation. Respectable middle-aged women in correct hats, with the calmly patient expressions of housewives inured to queueing, rubbed shoulders with flighty young creatures who darted out of line at intervals to chatter

gaily to friends up or down the queue. One of the latter, her bare feet thrust into sandals consisting of a strip of white leather attached precariously to a sole, had toenails painted startling white to match her skirt. Young couples in grubby jeans and shapeless sweaters, the girls mostly without make-up and with hair uncombed, stood seriously waiting, sometimes reading, or eating sandwiches out of battered, grimy shopping bags. Arty girls in clean, brightly-coloured sailcloth trousers, wearing dazzling make-up and exotic hair-styles, eyed with faint contempt the nice young teachers dressed in flowered summer frocks and engaged in earnest, clear-voiced conversation. A tweedy man who was reading the play of the evening in Russian discoursed on it in a voice unmistakably English to his companion, who was also English and tweedy. The sound of elderly foreign voices recalling the Moscow Arts Theatre of many years ago mingled with the bored tones of slightly supercilious bowler-hatted youths talking about nothing in particular. Soon small boys from nearby flats casually took up positions near the queuers who happened to be eating, and occasionally turned cartwheels or terrorised each other in the intervals when they were not hopefully rushing to open the doors of taxis arriving at the stalls entrance. An air of expectancy was heightened by the cheerful, bent little man selling souvenir programmes with a maximum of sales-talk.

We did not see any obvious doctors in the queue. I wonder what we looked like ourselves?

• • •

In our hospital N.A.D., I.D.K., M.S.U., and other concise contractions help us in the labour of form-filling. Now I've met the giant of abbreviations, acromegalic and ponderous in its proportions. The X-ray request card simply read as follows: "F.H.N.H.I.U.D.?" What *could* it mean? "Frightened hectic nurse has injured upper denture?" No. "Fœtal heart not heard. Intra-uterine death?"

• • •

A youngish woman came to me about a compensation claim. She had given up work as a waitress some months ago and had just been taken on in a new job, for which she was to receive a course of special training which would last for one week. She would then become a cosmetic consultant. Evidently there are no registrar problems in the beauty parlours.

• • •

GAY NIGHT IN A G.P.'S LIFE

11 P.M.—Receive request to visit Mrs. J. in her home.

11.30 P.M.—Visited Mrs. J., who has lately arrived from West Indies. Diagnosed acute appendicitis and advised removal to hospital and made necessary arrangements with E.B.S.

MIDNIGHT.—Went to bed.

1.50 A.M.—E.B.S. rang to say they had been advised by ambulance team that mother refused to go to hospital unless her baby went with her and they believed the baby to be only 3 weeks old. I advised E.B.S. that baby was nearly 4 months old and could safely be left at home.

2 A.M.—E.B.S. rang again to say that hospital would not admit the baby. I asked them to try other hospitals.

2.15 A.M.—E.B.S. rang again and asked me to call again at patient's house to sort things out.

2.25 A.M.—Arrive at patient's house again. Baby was 15 weeks old, but apparently there was no-one left at home during day to look after it. I drove to local hospital but could not persuade them to alter their minds about admitting baby. Returned home, rang another hospital who agreed to admit mother and baby. I advised E.B.S. of this and I returned to bed.

4.15 A.M.—Hospital rang to advise me that Mrs. J. had taken her discharge almost immediately after admission as (*a*) she felt better, and (*b*) an immediate operation was not to be performed. I took no further action.

6.30 A.M.—Night bell rang. At front door was Mrs. J.'s husband. He told me his wife was much worse and in great pain. Would I arrange readmittance to hospital. This I did.

9 A.M.—Start day's work.

Letters to the Editor

N.H.S. STAFF COLLEGE

SIR,—No amount of legislation or official exhortation can of itself bring together in harmony the three parts of our Health Service.

The fullest personal exchange of views at all levels would produce results beneficial to the family doctor, the hospital staff, and the medical officer of health, and through them to the patient.

Both industry and many of the leading professions find it advisable to establish central training and liaison units. There are staff colleges for the four Defence Services, for bankers, Civil Servants, hospital administrators, and even for trade unionists.

Is it not now time to set up a National Health Service Staff College where every sort of problem could be examined dispassionately? Not only the formal aspect of the work but also the private discussions which follow give value to this form of conjoined study.

Health Department,
Brighton.

W. S. PARKER
Medical Officer of Health.

TIME AND THE NURSE

SIR,—Last year you said: "If hospitals were to make it the rule that temperature, pulse-rate, and respiration-rate were to be recorded only if specifically requested by the clinician, nurses would have more time for more important techniques, and their proper work of nursing the sick."[1] When a "hospital" makes a "rule" of this sort, who is the "hospital"? I have been told that in some hospitals your practical suggestion is difficult to put into effect because the medical committees are reluctant to agree to it.

Although your suggestion would save much time, its implementation would probably be made easier if it could be demonstrated, in a manner acceptable to medical and to nursing committees alike, not only that routine temperature, pulse-rate, and respiration-rate recordings are of little value but also that the dropping of them is, as you imply, to the advantage of patients as well as nurses. No real nurse would wish to save time in this way if the patient were to suffer.

Secondly, there are legal considerations: would the abolition of this routine mean that the ward-sister must accept legal responsibility for failing to take the recordings exceptionally on her own initiative? If so, routine might prove a cheap form of insurance.

Thirdly, what would be the effect on the patient public? Maybe many feel that this routine procedure provides an important opportunity for regular personal contact between patient and nurse; what other regular opportunities are envisaged in the "proper work of nursing the sick" to which you refer?

An important time-saving suggestion of this nature merits thorough investigation.

Department of Health Education,
Battersea College of Technology,
London, S.W.11.

M. H. OUSELEY.

TOXÆMIA IN PREGNANCY

SIR,—I have read Professor Platt's criticism (June 14) of the account (June 7, p. 1235) of the new film on this subject. In quoting one part of your account he has failed to appreciate what is clearly stated in another part—that the film was made expressly for the education of expectant mothers, and, I might add, not for members of the medical profession.

In illustrating the various types of women which he mentions—namely, Mrs. Stout, Mrs. Pale, and Mrs.

1. *Lancet*, 1957, ii, 1103.

Weary—I think it will be appreciated that these people are putting an abnormal strain on their bodily functions during pregnancy. By typifying these women in the film, it is hoped that the expectant mothers will, by their cooperation with their medical advisers, remove these factors of overweight, anæmia, malnutrition, and fatigue which hasten the onset of toxæmia in susceptible subjects.

I speak as a practical obstetrician dealing more with people than with statistics and theories, and also as obstetric adviser to the film in question. I believe that there is very little substance in Professor Platt's criticism, when related to the purpose of the film. For one who is an ardent follower of scientific truth, it is strange that Professor Platt should criticise a film which he has never seen, and of which he has read only a brief account. Nevertheless, I look forward to spending a pleasant half-hour with him, showing him the film, and providing some relevant references.

Kent and Canterbury Hospital, Canterbury. JEAN R. C. BURTON-BROWN.

ACQUIRED OSTEOGENESIS IMPERFECTA?

SIR,—Dr. Koumans in his letter last week says that his case of osteogenesis imperfecta had a total blood-protein of 6·8 mg. per 100 ml., improving later to 7·2 mg. per 100 ml. The best people have values of about a thousand times this amount. That is the worst of this infernal decimal system. Who was it that called it " those damned dots! "?

London, N.W.3. J. W. SHACKLE.

GRAVITATIONAL LEG ULCERS IN THE ELDERLY

SIR,—Dr. Rivlin is to be congratulated on his very practical article last week. He rightly stresses the importance of the history, for we often depend on this to determine whether the ulcer is varicose or post-thrombotic. As he points out, the distinction is useful as it affects treatment and prognosis.

Dr. Rivlin classified 75% of his series of 200 patients as having varicose ulcers and 15% as post-thrombotic. The proportion of varicose ulcers is greater than that found by many workers in recent years, and one wonders whether the name of his clinic attracts a larger number with varicose veins than does a general-hospital clinic dealing primarily with leg ulcers. Certainly in my own series the proportions are very different. Of 1676 patients with " venous " leg ulcers (i.e., excluding those resulting from arthritis, arterial disease, or other conditions) 1172 (69·9%) gave a clear history of thrombophlebitis of the lower limb with much œdema. The thrombophlebitis had been associated with various conditions—post-partum 283, injury to the leg 282, unknown causes 154, medical illness 94, fractured leg 79, ante-partum 70, treatment of varicose veins (usually injections) 70, operation (not on the leg) 61, infection of the leg 37, burns of the leg 27, operation on the leg 15. There were in addition 266 patients with no definite history but whose ulcers were probably post-thrombotic.

It would have been interesting to have had Dr. Rivlin's views on arterial factors, especially in the 93 patients over the age of 60. There seems little doubt that arteriosclerosis or hypertension or both may play an important part in the ætiology of gravitational ulcers.

I have not calculated the statistical significance of Dr. Rivlin's figures showing the results of treatment, but wonder whether there is any significant difference between the varicose and post-thrombotic groups. A factor of great importance in the rate of healing is the chronicity of the ulceration before treatment is started.

Leeds. S. T. ANNING.

PHYSICAL CHANGES IN THE PROLAPSED DISC

SIR,—Your correspondents Mr. Bonnin (June 28), Mr. Hendry (June 21), and Mr. MacKenzie (June 21) are satisfied that the phenomena we attribute to disorders of the disc can be fully explained by mechanical injuries superimposed on the process of desiccation in disc degeneration. They find it unnecessary to invoke any other mechanism such as I have postulated in a transient phase of raised internal disc tension. It is easy to explain chronic backache by disc desiccation and to explain some attacks of lumbago and sciatica by analogy with the displacement of a torn meniscus in the knee, but there are other aspects which seem to me to demand a more subtle explanation.

Compare, for instance, the quality of the pain of lumbago with the quality of the pain when a patient displaces a cartilage in the knee. After the first twenty-four hours a " locked " knee ceases to cause spontaneous pain and is painful only if the patient fails to rest the limb. By contrast a severe attack of lumbago will cause spontaneous agony for two or three weeks and resist bed rest and even injections of morphine. This persistent spontaneous pain is unlike the response of the body to a simple mechanical displacement, because skeletal tissues rapidly adapt to a displaced fragment and pain will disappear though it will return if function is demanded of the part. It seems to me that the persistent agony of a severe attack of lumbago is more like the pain caused by raised tension inside cavities which resist distension. An alveolar abscess or a boil in the external auditory meatus causes pain which persists in a way which could not be imitated by inserting a solid object of the same shape and size as the bead of pus, because the tissues which were stretched by the solid object would adapt themselves and only a fluid mechanism capable of continued expansion could maintain the tension and so maintain the pain. One of the most painful complications in orthopædic surgery is a postoperative hæmarthrosis after meniscectomy; if bleeding from a small artery fills the closed cavity of the knee-joint with blood under tension the postoperative pain is so severe that no amount of morphine will render the patient completely comfortable nor will any position of the limb afford relief, and this condition will persist until the tension is relieved.

One of the most surprising things about acute lumbago is that the amount of pain does not seem to be proportional to the amount of organic change visible in the disc. It is possible for a patient to have a violent attack of lumbago in early adult life and thereafter to have attacks for twenty years without the vertebral bodies adjacent to the disc showing any of the changes we associate with degeneration of the annulus, loss of elasticity, or failure of the hydraulic mechanics of the disc. I find it difficult to explain how a young man can quickly recover athletic perfection after a prostrating attack of acute lumbago if the process is merely a degeneration of the annulus leaving this structure capable of rupture by forces which would not damage a normal disc. Would not a young athlete with a degenerate annulus be permanently debarred from sport?

Like a number of other surgeons ten or twelve years ago I used to explore cases of acute lumbago on the theory that these were caused by protrusions which had emerged in positions such as the midline where a nerve-root was not directly involved to give the picture which otherwise would be sciatica. We rarely found convincing protrusions in these cases, but what is cogent to the present argument is that the material removed appeared more often to be normal than to be fibrous and stringy.

I agree with the comment in your annotation of June 7 that one of the difficulties in accepting the hypothesis of raised disc tension is that I have never observed swollen and gelatinous disc tissue at operation. I do not think that this is an insuperable obstacle to the theory, because the disc is contained inside a tough casing and the pressure can rise isometrically, without the volume increasing very much. In my experiments using the cadaveric disc the

volume of mercury displaced by the swelling disc to record a pressure of 150 mm. Hg was only about 70 c.mm. but the volume of the disc was about 6000 c.mm. It is hardly to be expected that this small amount of swelling would produce visible œdema.

University Department of Orthopædic Surgery, Royal Infirmary, Manchester, 13. JOHN CHARNLEY.

BILIARY VESICULAR STASIS

SIR,—I am delighted to see, in Mr. Dudfield Rose's article last week, a more critical attitude towards biliary surgery, as with modern methods of investigation the time has long passed when blind cholecystectomy should be performed for obvious or presumed diseases of the biliary tract.

I have no personal experience of manometry, which is especially popular with French surgeons. However, serial cholecystograms and especially operative cholangiography are imperative in order to reveal conditions which might otherwise be overlooked. Operative cholangiography is a simple and often illuminating procedure, which I have used in over 1000 cases, and I regard it as an essential investigation in an elective cholecystectomy.[1]

Mr. Rose emphasises that reflex spasm of the sphincter of Oddi is a clinical entity, but he does not mention that a pathological appendix can cause reflex hypertonic vesicular stasis, and in early cases—i.e., before the muscle becomes fibrotic—biliary symptoms disappear after appendicectomy.

Owing to the disappointing results of blind cholecystectomy no investigation should be omitted which may help in unravelling the complex conditions which affect the biliary tract, and "repeat" operations are not only disappointing to the patient, but are likely to tax the skill and patience of any surgeon.

London, W.1. MCNEILL LOVE.

THE OUTPATIENT DEPARTMENT

SIR,—I was glad to see your annotation of May 10, and I agree with Dr. Emslie and Dr. Fry.

To Dr. Fry's three main roles of the outpatient department—consultation, diagnostic, special investigation and treatment centre—I would add a fourth: that of teaching centre for undergraduates and postgraduates, as illustrated in a contribution to the Widdicombe File [2] some years ago.

As you remark, much capital needs to be devoted to improving the outpatient department, but there is another no less urgent investment, and that is in men. The outpatient department requires no less adequate staffing than the ward. Greater good would be done to more patients if the best physicians spent more time in outpatients, where there is the greater challenge, and less time at the bedside.

Seven years ago the Hadassah Medical Organisation inaugurated Medical Outpatient Department C, staffed by full-time physicians. In this unit, 18,000 patients have been treated. There are 2000 visits a month, including 200 by new patients. 12 patients a month are referred for medical admission and 5 more patients to the surgical wards. Many patients are saved the need of hospital beds, and patients who cannot be admitted, or who refuse admission, are often able to get essential treatment in outpatients. Undergraduates and postgraduates find there a representative cross-section of the world of practice. There are also special problems, such as how to treat patients living in bad environments, and how best to supplement the training of younger doctors in the outpatient department.

Outpatient work of a high standard requires: (1) physicians whose first interest is in the patient; (2) time to listen and to examine and to answer the patient (which means adequate staffing); (3) consultative services in the specialties; (4) laboratory and radiological services; (5) good records and records office; (6) recovery-observation beds; (7) research work based on the outpatient.

The success and prestige of an outpatient department depend on the active presence of senior staff and their encouragement by the administration and, in a teaching hospital, by the Faculty.

A good outpatient department is an expensive undertaking, but without it health services cannot be run economically, efficiently, or humanely.

Mayer de Rothschild Hadassah University Hospital, Jerusalem. ELI DAVIS
Chief, Medical Outpatient Clinic C.

TIME AND THE NERVOUS SYSTEM

SIR,—I fully sympathise with Professor Russ's difficulty (expressed in his letter last week) in grasping "Professor Woodger's definition of Time" because there is no such thing, and the non-existent is notoriously difficult to grasp. Let us hope that there will always be no such thing. What was offered was a definition of "clock"—which is quite a different matter. Confusing "time" with "clock" is like confusing "space" with "foot-rule".

I was glad to see Professor Russ's reference to Robb, because Robb's work has been sadly neglected—perhaps because it appeared (if memory fails me not) at the beginning of the first world war. But it does not do Robb justice to say that "he proposed that Time is simply a matter of 'before' and 'after'". What he did was to construct axiomatically a theory of spatiotemporal relations which he called the theory of Conical Order. In this he introduced the notion of *after in time* as an undefined notion. In my first attempt to use the axiomatic method in biology (1937) I used *before in time* as an undefined notion. If you have either of these the other can be defined as its converse. Surely before and after are not attributes as Professor Russ calls them but relations; and in that case what can it mean to speak of "the span between them"? It is only the terms which stand in these relations to one another that can have (some of them) a span between them, and that span is itself a term in the relation.

Department of Biology, Middlesex Hospital Medical School, London, W.1. J. H. WOODGER.

THE PLACE OF HUMAN BIOLOGY IN MEDICAL EDUCATION

SIR,—I am bound to agree with Dr. Scott (June 21) that Dr. Tanner's suggested preclinical curriculum (June 7) seems rather long and rather diffuse. And I agree with Dr. Scott again that much of our present trouble can be traced to the unreal and misleading separation of anatomy, physiology, and pathology. As he says, the important thing is that anatomy and physiology should be understood, not merely memorised. They cannot really be understood in isolation from one another; nor can pathology be understood in isolation from physiology and anatomy.

A similar attitude should in my opinion be adopted towards physics, chemistry, and biology. I do not think that the student will "for all practical purposes . . . have done enough at school". He may have done enough to gain exemption from 1st M.B., but he will not have done enough to understand these subjects and their bearing on his later studies. Just as Dr. Scott recommends that anatomy and pathology should run through the whole curriculum and on into postgraduate work, so should our knowledge and understanding of the basic sciences be enlarged by constant references to them throughout our working lives. Thus we may better understand what we are trying

1. Love, McN. *Brit. J. Surg.* 1952, **40**, 161.
2. *Lancet*, 1954, ii, 420.

to do in the course of our medical practice. Thus we can move more and more towards scientific medicine and away from empiricism. (There should be no more need than there is at present to introduce a course of instruction on the humanist aspect of our work.)

Perhaps I should add that I write in all humility as one who daily regrets his lack of grasp of the subjects he " learnt " for 1st and 2nd M.B.

How right Dr. Scott is about teaching! The art of great teaching must certainly be restored to its proper place. But there are not many great teachers, and they stand out under all circumstances. It is also important that those who like teaching should be encouraged to do it, and that teaching should not be regarded as a chore but as one of the highest of human activities.

Department of Morbid Anatomy,
Paddington General Hospital,
London, W.9. R. R. WILSON.

COLOURED TABLETS

SIR,—Mr. Grainger (June 21) must be aware that green tablets, which are seventh on his list of degree of attraction to children, have been far and away the most frequent cause of accident—I refer to the green tablets of ferrous sulphate.

Surely Mr. Grainger is being less than fair to the British Pharmacopœia Commission in his second paragraph. The statement in the introduction to the *B.P. 1958* on the use of colour in tablets is as follows:

" Permission has been given in a limited number of monographs on tablets for the addition of a suitable colouring agent to the coating because unfortunately uncoloured tablets have not been made available."

This permission in any case applies only to a few coated tablets and not to the majority of tablets contained in the *B.P.*

Ciba Laboratories Ltd.,
Horsham, Sussex. A. CHAMINGS.

PREMEDICATION FOR OUTPATIENT ELECTROCONVULSION THERAPY

SIR,—Dr. Collard's letter of June 21 is of interest at this time when we are concerned in making electroplexy as safe a procedure as possible.

In my limited experience of both general-hospital and mental-hospital practice, I have found that resistance among patients to pretreatment usually responds to simple explanation and sympathetic reassurance.

Before recommending premedication in addition to thiopentone and relaxants it might be worth while bearing in mind certain points which Dr. Collard does not mention:

(*a*) That cumulative and/or synergistic effects of premedication plus thiopentone and relaxants might be expected to cause an increase of respiratory depression and postconvulsive apnœa.

(*b*) That there might perhaps be an increased number of subshocks received by the patients, which in themselves, although not harmful, might necessitate either stepping up the voltage or a greater number of attendances for the patient in order to produce satisfactory remission, and in the event of increasing the voltage, the possibility of neuronal damage being produced in some patients—e.g., recurrent endogenous depressives—who may require several courses of treatment.

(*c*) Whether premedication diminishes postconvulsive confusion, which in my experience is complained of more by patients than pretreatment anxiety.

In view of the fact that the use of thiopentone and relaxant drugs for electroplexy has been associated with an increase of mortality, it is desirable to adopt a critical attitude towards the addition of what may be a further risk to the patient, unless the results of properly controlled experiments show otherwise.

St. James's Hospital,
Leeds. MARSHALL FRIEZE.

NEW LIGHT ON MOLLUSCUM SEBACEUM

SIR,—May I be allowed to comment on your interesting leading article of June 7? The red margin of the lip is a site on which these tumours may arise, though the idea that they can occur here had been resisted by those who believed in the pilosebaceous origin. Since I published my first case,[1] " kerato-acanthoma of the lower-lip red margin ", I have collected others. Spontaneous regression was noted and shown in the published photographs, and was complete. To fit in with the theory of origin the red margin of the lip should contain pilosebaceous follicles. According to the anatomists the lips, though hairless, may contain sebaceous glands. Do these show cyclical activity?

Cambridge. C. HOWARD WHITTLE.

ANÆSTHESIA FOR THE EMPHYSEMATOUS

SIR,—In your annotation of June 14 you discuss the special difficulties of anæsthesia in the presence of respiratory insufficiency and state:

" Unfortunately there is as yet no simple way of estimating the gas tensions of arterial blood; but, if metabolic alkalosis can be excluded, the serum-bicarbonate content of venous blood will indicate whether or not carbon-dioxide retention is present."

In our experience this simple test may be seriously misleading if given the interpretation you suggest. In the accompanying table we give the blood-gas findings in four patients suffering from moderate to very severe CO_2 retention following anæsthesia and surgery.

Case	Time	Plasma				Blood
		$T.CO_2$ (mM per l)	$H.CO_3$ (mM per l)	pH	pCO_2 (mm Hg.)	O_2 satn. (%)
1	Immediately postop.	30·8	28·3	7·15	83	93
2	Immediately preop.	37·0	34·8	7·29	75	70
	Postop.	34·9	30·5	6·94	147	85
3	Postop.	24·1	20·0	6·79	137	42
4	3 hr. postop.	30·4	26·4	6·92	133	90

Of these patients, cases 1, 3, and 4 almost certainly had normal electrolytes and blood-gas tensions before operation. Despite severe CO_2 retention their plasma-$T.CO_2$ and bicarbonate levels remained within the normal range. Case 2 had emphysema and elevated $T.CO_2$ before operation. Postoperatively the $T.CO_2$ had fallen slightly. This was not associated with improvement in the CO_2 retention but with serious aggravation of it.

The reason why the plasma-$T.CO_2$ fails to rise to the levels expected in severe CO_2 retention is that anæsthesia itself, especially if there is anoxæmia, is associated with metabolic acidosis which depresses the level of plasma bicarbonate. The resulting level of plasma-$T.CO_2$ is therefore a balance between two influences working in opposite directions.

This problem cannot be resolved by making one measurement on blood. Two measurements are necessary: the blood-pH and the plasma-$T.CO_2$. The former estimation can be done in a few minutes with modern techniques, and therefore we suggest that your final sentence should have read: "Few will dispute that facilities for determining the blood-pH and plasma-$T.CO_2$ level should nowadays be available to the anæsthetist."

Surgical Unit,
St. Mary's Hospital,
London, W.2. VICTOR WYNN
DAVID BROOKS.

1. *Lancet*, 1957, i, 1019.

HOOKWORM AND ANAEMIA

SIR,—Dr. Meiklejohn and Dr. Passmore (April 19) suggest that diet is the main factor in the anæmia associated for so long with hookworm infestation in the tropics. I would agree with Sir Philip Manson-Bahr (May 3) that diet has little if anything to do with the anæmia.

Among tea-garden labour in Assam we see a good deal of anæmia even though the malarial type is now almost extinct. When patients who are investigated and found to have hookworm infestation alone are treated for this the improvement is dramatic with no alteration in diet; and they are indeed treated as outpatients so that there can be no change.

As regards the financing of further research, I would point out that the Indian Tea Association financed a long and extensive survey carried out by Dr. Foy and Dr. Kondi in 1955 on the causes of anæmia in Assam, and their conclusions coincided with the less expert opinion of the tea-garden doctors: that is, that hookworm was one of the causes, be it only one, of the many that are found in this area.

Panitola P.O., Assam. D. A. H. MCNAUGHT.

EFFECT OF PREDNISOLONE ON VITAMIN-B_{12} ABSORPTION IN PERNICIOUS ANÆMIA

SIR,—While studying lactic dehydrogenase (LD) activity in various forms of megaloblastic anæmia, I came across the interesting paper by Doig et al.[1] on the response of megaloblastic anæmias to prednisolone. I have now observed that vitamin B_{12} not only causes hæmatological remission but also restores to normal the increased LD values found in pernicious anæmia. Later, I found that the LD activity also responded to prednisolone.

Four cases were studied: two patients with pernicious anæmia in relapse, one with pernicious anæmia in remission, and one non-anæmic patient who had had a total gastrectomy for peptic ulcer. The results were as follows (the oral dose of B_{12} given in the Schilling test was 1 μg. B_{12}-^{60}Co, and an excretion of 2·5% has been regarded as the upper limit in pernicious anæmia):

Condition	Schilling test: After prednisolone	Schilling test: Prednisolone discontinued, B_{12} given parenterally
Pernicious anæmia in relapse	8·8%	1·7%
Pernicious anæmia in relapse	8·6%	3·9%, later 3·1%
	Before prednisolone	*After prednisolone*
Pernicious anæmia in remission	0·1%	2·8%
Total gastrectomy	0·3%	0·4%

Thus, in two patients with pernicious anæmia, who showed improvement of the blood-picture and restoration of the bone-marrow to normal after prednisolone therapy (30 mg. daily for 21 days), the Schilling test values also became almost normal. When the effect of the prednisolone had subsided and adequate antianæmic therapy had been instituted, the Schilling values fell below normal. In the first case a fæcal excretion test (oral dose 1 μg. B_{12}-^{60}Co) showed practically normal values (62·8%) after prednisolone.

In the third case (pernicious anæmia in remission), where the response to the Schilling test was much decreased before prednisolone therapy (30 mg. daily for 7 days), a significantly increased value was obtained after prednisolone. By contrast, the patient who had had a total gastrectomy did not respond to prednisolone, as revealed by the Schilling test.

These preliminary results suggest that the remission that follows the giving of prednisolone is due to increased absorption of vitamin B_{12}, which in turn may be attributable to an increase in the production of intrinsic factor caused by the prednisolone. It should be emphasised that the absence of a response in the gastrectomised patient points in the same direction, since in this case cells capable of producing intrinsic factor were lacking.

In both cases of manifest pernicious anæmia responding to prednisolone, there was a definite rise in the microbiological serum-B_{12} level during prednisolone therapy (63 to 125 $\mu\mu$g. per ml. and 46 to 134 $\mu\mu$g. per ml., respectively). This also supports the assumption that the remission may have been due to absorption of small amounts of vitamin B_{12} from the intestine.

Fourth Medical University Clinic,
Maria Hospital,
Helsingfors, Finland. RUBEN GORDIN.

1. Doig, A., Girdwood, R. H., Duthie, J. J. R., Knox J. D. E. *Lancet*, 1957, ii, 966.

"A BARE BODKIN"

SIR,—Francis Bacon said that "death will not be denied"; William Hunter commented, "How easy and pleasant a thing it is to die"; and Hamlet's famous soliloquy refers to the simplicity with which life can be ended. I believe that some articles, such as those of Bedford,[1 2] give, perhaps, an unnecessarily gloomy view of the capacity of the human body, however aged, to withstand "the thousand natural shocks That flesh is heir to". The following case is reported in support of this thesis, and because complete recovery from a number of severe cardiovascular accidents at the age of 92 is worthy of record.

The patient was a farmer who, at the ripe age of 92, was admitted to hospital under the care of my colleague, Dr. J. Charles Shee, on May 19, 1957, following a severe hæmatemesis, for which he received transfusions amounting to 8 pints of blood in the first instance. He had been most unwilling to enter hospital for treatment, as he had never been ill before, and felt that he would recover more quickly at home on his farm in the bush. Surgical opinion was not sought at this time, since his doctor did not think that surgery was likely to be helpful in so old a patient.

Medical treatment seemed to have been entirely successful, but the patient suffered a further hæmatemesis on May 21 which necessitated transfusion of 3 pints of blood. I first met the patient on May 24, when he had had another severe hæmatemesis. I reached the bedside in response to an urgent summons, to find a cheerful old gentleman, "a man not old, but mellow, like good wine", whiter than the sheet, with obvious evidence of a massive hæmatemesis, receiving blood through veins in both arms, and glucose solution through his right long saphenous vein. Even this did not seem to be adequate to replace the amounts he had lost and was losing. His cardiovascular age seemed, however, to be less than his chronological age, for in spite of his shocked condition he was sufficiently alert to lay down a most exact therapeutic regimen in the whispered words, "Cut me quick, Doc, or I'm a goner".

This succinct assessment of the situation was so patently correct that the operation began less than thirty minutes later. Laparotomy disclosed a large gastric ulcer astride the left gastric artery about 2 in. below the œsophagogastric junction. Fortunately, although a chronic ulcer, it had not penetrated any other viscus, and a rapid partial gastrectomy was comparatively easy to perform. The left gastric artery was controlled as early as possible, and his condition improved considerably as soon as this step had been completed.

His condition at the end of the operation was fairly good, and he made good progress until the second postoperative day, when he seemed very shocked. This was due to the onset of auricular fibrillation, which was controlled within forty-eight hours by digoxin. He then made an uninterrupted recovery until seven days later, when he complained of severe upper abdominal pain, and once again looked shocked and ill. This setback was due to a moderate-sized anterior myocardial infarct, which responded to treatment.

1. Bedford, P. D. *Lancet*, 1956, ii, 750.
2. Bedford, P. D. *ibid.* 1957, ii, 505.

From this time onwards, his condition never gave rise to any anxiety, and he left hospital on June 20, in excellent general condition, and with his fibrillation controlled.

Recently, he sent me a present of some biltong, prepared from a buck which he had shot to celebrate his 93rd birthday, surely adequate confirmation of the completeness of his recovery.

The main interest of this case is its demonstration of the recuperative powers of such an aged patient, following two severe and one torrential hæmatemeses, auricular fibrillation, and a myocardial infarct, all within the space of some fourteen days. In spite of all these serious insults to his cardiovascular system, and the stress of a major surgical procedure, he made a complete recovery, thereby demonstrating, once again, that " a man is as old as his arteries ".

I should like to express my thanks to Dr. J. Charles Shee for his help in the management of this patient, both before and after operation, for without his skill the patient would not have survived. At least an equal tribute must be paid to Dr. Ian Michie, who administered the anæsthetic.

Bulawayo, Southern Rhodesia. WILLIAM HOUSTON.

DEATH OF A BOXER

SIR,—In reference to Dr. Compton Smith's letter last week, I cannot recall any cases of cerebral injury or indeed meeting any punch-drunk boxers in my long association with both amateur and professional boxing. Injuries can of course take place if a man cannot defend himself, but the trained referees of the A.B.A. and B.B.B.C. in consultation with their medical advisers are always vigilant to prevent men entering the ring in an unfit condition of health. They are also quick to stop a contest if a man is badly outmatched and suffering any serious injury before or during the fight.

Tunbridge Wells. E. F. ST. J. LYBURN.

AUTO-ANTIBODIES IN THYROID CARCINOMA

SIR,—It is now well established [1 2] that antibodies which precipitate with thyroid extracts can be demonstrated in the serum of patients with lymphadenoid goitre.

In testing sera of patients with various thyroid disorders, we found that three out of six cases of thyroid carcinoma had high titres of antithyroglobulin when examined by the tanned-cell hæmagglutination test. In two of them, the level of antibody was sufficiently high (titre of 20,000) to give a positive precipitin test by the Oudin method.

In the first of these two cases biopsy showed anaplastic carcinoma and areas histologically resembling lymphadenoid goitre. In the second case, treated by hemithyroidectomy, examination of many blocks of the excised lobe showed replacement of all normal thyroid tissue by papillary carcinoma (no tissue was available from the remaining lobe, which appeared slightly enlarged but otherwise normal). The third case had a titre of 640 in the tanned-cell hæmagglutination test and the Oudin test was negative. Examination of the thyroid gland revealed both anaplastic carcinoma and lymphadenoid goitre.

The clinical distinction between thyroid carcinoma and lymphadenoid goitre may be difficult, and until recently the ultimate diagnosis often depended on microscopic examination of the gland. Abnormal flocculation reactions or positive precipitin tests may now be taken to favour a diagnosis of lymphadenoid goitre; but, judging by our experience, the finding of positive serological (precipitin) tests does not justify a firm diagnosis of lymphadenoid goitre unless there is other strongly suggestive clinical or biochemical evidence. Lymphadenoidal goitre may well predispose to the subsequent development of carcinoma, and the two conditions may be present together. Although surgery is now seldom indicated as a definitive form of treatment for lymphadenoid goitre, surgical assistance should be freely invoked to establish a certain diagnosis.

Pathology Department, University of Edinburgh. A. E. STUART
W. S. A. ALLAN.

1. Roitt, I. M., Doniach, D., Campbell, P. N., Vaughan Hudson, R. *Lancet*, 1956, ii, 820.
2. Roitt, I. M., Campbell, P. N., Doniach, D. *Biochem. J.* 1958, **69**, 248.

THE TOURNIQUET

SIR,—I congratulate you on your leading article of May 31.

I hold it very necessary to popularise, among surgeons, the aversion towards that horrible medieval instrument that is the tourniquet. In this sense, I go much further than Professor Pannett, since I use neither the tourniquet nor any other kind of temporary hæmostasis for any limb operation—not even for amputations.[1] I believe that the immediate and late complications of amputation have thereby been avoided—especially stump neuralgias and phantom limbs. Progress after operations on bone, nerve or tendon has been excellent. The systematic hæmostasis introduced, step by step, during the operation, maintains a normal blood-supply and avoids the serious disturbance caused by ischæmia and reactional hyperæmia.

Barcelona. M. BASTOS ANSART.

TETANUS

SIR,—In a leader in your issue of May 10 it was suggested that Hippocrates gave the first description of tetanus and of its usually fatal outcome. However, the remarkable author of the Edwin Smith papyrus (19th century B.C.) (which is thought to be a copy of an earlier work, possibly dating back to the building of the Pyramids —i.e., to the 30th century B.C.[2]) describes the following clinical picture.

Examination: If thou examinest a man having a gaping wound in his head, penetrating to the bone (and), perforating the sutures of his skull, thou shouldst palpate his wound, (although) he shudders exceedingly. Thou shouldst cause him to lift his face; if it is painful for him to open his mouth, (and) his heart beats feebly; if thou observe his spittle hanging at his two lips and not falling off, while he discharges blood from both his nostrils (and) from both his ears; he suffers with stiffness in his neck, (and) is unable to look at his two shoulders and his breast.

First diagnosis: Thou shouldst say regarding him: "One having a gaping wound in his head, penetrating to the bone (and) perforating the sutures of his skull; the cord of his mandible is contracted; he discharges blood from both his nostrils (and) from both his ears, while he suffers with stiffness in his neck. An ailment with which I will contend ".

Second examination: If then, thou findest that the flesh of that man has developed fever from wound which is in the sutures of his skull, while that man has developed ty' (untranslatable) from that wound, thou shouldst lay thy hand upon him. Shouldst thou find his countenance is clammy with sweat, the ligaments of his neck are tense, his face is ruddy, his teeth and his back (?) the odor of the chest of his head is like the BKN (urine) of sheep, his mouth is bound, (and) both his eyebrows are drawn, while his face is as if he wept.

Second diagnosis: Thou shouldst say regarding him: " One having a gaping wound in his head, penetrating to the bone, perforating the sutures of his skull, he has developed ty', his mouth is bound, (and) he suffers with stiffness in his neck. An ailment not to be treated "?

Third examination: If, however, thou findest that that man has become pale and has already shown exhaustion.

Third treatment: Thou shouldst have made for him a wooden brace (or tube) with linen and put into his mouth.

Gloss B:* As for: " The cord of his mandible is contracted ", it means a stiffening on the part of the ligaments at the end of his

1. Bastos Ansart, M. Tratado de Operatoria Ortopedica y Traumatologica. Barcelona, 1957.
2. Husein, K. *J. Bone Jt Surg.* 1949, **31B**, 309.

* These are glossaries given in the original papyrus as explanatory notes to the text. They were probably written by later copyists.

ramus, which are fastened to his temporal bone, that is at the end of his jaw, without moving to and fro, so that it is not easy for him to open his mouth because of his pain.

Gloss E: As for: " The ligaments of his neck are tense " it means that the ligaments of his neck are stretched stiff by reason of his injury.

Gloss I: As for: " His mouth is bound, (and) both his eyebrows are drawn, while his face is as if he wept ", it means that he does not open his mouth that he may speak, both his eyebrows are distorted, one drawing upward, the other drooping downward, like one who winks while his face weeps.

This gives a very objective description of trismus, neck rigidity, and risus sardonicus (?), following a wound of the head, and ending fatally. The phrase " an ailment not to be treated " meant in old Egyptian texts a fatal outcome, in contradistinction to " an ailment I shall treat " and " an ailment with which I will contend " which were used to signify a good and a doubtful prognosis respectively.

The possibility that this description meant meningitis cannot, of course, be excluded. The necessity of placing a wooden brace (or tube) between the teeth and the other signs make it very likely, however, that it meant tetanus.

Faculty of Medicine,
Ein Shams University, Cairo. PAUL GHALIOUNGUI.

THE RUSSIAN VACCINE

SIR,—It is surely absurd that this substance should be used for the treatment of disseminated sclerosis, when it is quite untested for this purpose and, as far as I can make out, is not even being used in Russia for treatment of this disease. I am frequently asked about its use and have no hesitation in saying that as far as I can judge it is useless for cases of disseminated sclerosis, and should not be used as it might be harmful.

Oxford. W. RITCHIE RUSSELL.

DIETARY RESTRICTION AND COAGULABILITY OF BLOOD

SIR,—I read with great interest the article by Dr. McDonald and Miss Edgill in your issue of May 10. We reported in our letter of Feb. 8 the results of our investigations on hypercoagulability and " heparin loading test ". As we had pointed out,[1–3] our " heparin loading test " can reveal hypercoagulability.

In patients with hypercoagulability, the level of cholesterol, total lipid, and phospholipid were increased and at the same time there was an increase of β-lipids and a decrease of α-lipids in lipidograms.

In cases showing hypercoagulability according to the heparin loading test, three to six months of strict low-fat diet with or without anticoagulant treatment, hypercoagulability decreased or became normal (50 mg. heparin twice weekly intravenously). Further details will be published later.

The remark of Dr. McDonald and Miss Edgill about the parallel between the cholesterol level and platelet-stickiness is of considerable importance.

We, too, have observed [3 4] the connection between the blood-lipid level and platelet function.

In the course of our studies [2–5] of the hæmorrhagic diathesis in liver diseases, we drew attention to the fact that when cholesterol and cholesterol esters were much diminished, α-lipids almost disappeared and β-lipids decreased, whereas the agglutinability and adhesiveness of the platelets were much reduced or lost and the bleeding-time was prolonged.

At the same time, there was a large reduction in the formation of thromboplastin (Biggs and Douglas's test) due to a defect in platelet suspension. The platelets did not contain the thromboplastic factor (phospholipid): in other words, a secondary thrombopathia was observed [5] in liver disorders.

1. Ulutin, O. N., Sestakof, D. *Lancet*, 1958, i, 324.
2. Ulutin, O. N., Sestakof, D. *Bull. Soc. turq. Méd.* 1957, **23**, 689.
3. Ulutin, O. N. Study of the Formation of Thromboplastin in Hæmorrhagic Disorders. Istanbul, 1957.
4. Berker, F., Ulutin, O. N., Karaca, M., Sestakof, D. *Bull. Soc. turq. Méd.* (in the press).
5. Ulutin, O. N., Karaca, M. *ibid.* 1956, **22** 473.

As Dr. McDonald and Miss Edgill have shown, and our observations have confirmed, there is a close relationship between the level of blood-lipids and platelet functions.

Second Internal Clinic of Istanbul
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Istanbul, Turkey. ORHAN NURI ULUTIN.

TREATMENT OF ASTHMA AND HAYFEVER BY HYPNOSIS

SIR,—I studied with great interest Dr. Mason and Dr. Black's case-report in your issue of April 26. I especially admired the thoroughness and objectivity of the presentation.

Apparently without realising it, they submitted this patient to one form of conventional " desensitisation " therapy—namely, the parenteral administration (either subcutaneously or intradermally), co-seasonally, of very minute amounts of pollen extracts. This method of treatment is extremely effective in all patients with pure pollen allergy; and is especially effective when preceded by a course of relatively high-dosage therapy, which, I presume, is what the patient actually had (during the previous season).

A very interesting clinical feature is the " cold in the head ", contracted during the " second week of June ". This episode was undoubtedly allergic in nature, especially in view of the specific response to ephedrine. It probably occurred between the clinic visits of week 7 and week 8, if we assume that week 1 was represented by April 29. What is interesting is the fact that during the two visits immediately preceding (weeks 6 and 7), she was given intradermal injections only in the left arm, whereas on all of the other visits, if we consider only the span of the height of the pollen season, she was given injections in the left leg as well as the left arm. In other words, for weeks 6 and 7 she received only *half* the usual dosage. It is entirely possible that this half dosage was slightly less than this patient's particular requirement for this particular pollen season. If so, the accumulated deficiency of two weeks' underdosage could well explain the allergic symptoms described as a " cold in the head ".

Nevertheless Dr. Mason and Dr. Black have made an important contribution—namely, their demonstration of the relationship between psychomotor factors and skin reactivity. And this, after all, is the main theme of the article, judging by its title.

We have continually noted that, in any given group of patients, there is a remarkable lack of correlation between the relative severity of clinical symptoms and the relative intensity of skin reactions. For example, one patient may have very weak (although perhaps highly specific) skin reactions, but very severe clinical symptoms. Another patient may have very strong skin reactions with very mild clinical symptoms.

This same lack of correlation is observed whether or not the patient has had any " desensitisation " therapy. Some patients who have been clinically cured by " desensitisation " therapy will nevertheless retain their skin reactivity, at least to some definite degree. On the other hand, some patients will have relatively rapid diminution of skin reactivity early in the course of treatment, even though their clinical symptoms may not yet be under control.

This quantitative dissociation between skin reactivity and clinical symptoms has been a source of many misunderstandings and much confusion. Many explanations have been offered by various investigators, but they usually add to the confusion.

The observations of Dr. Mason and Dr. Black lend some objective evidence, which, if properly interpreted and followed up, may help to lead us out of our bewildered state. Their observations suggest that, even though skin reactivity is specifically related, *qualitatively*, to clinical allergic manifestations, the actual *intensity* of the skin reactions may be strongly influenced by purely psychomotor factors.

On the other hand, they have not proved anything conclusive about the relationship between psychomotor factors and clinical allergic manifestations. In fact, on the basis of the data

given, we cannot conclude that psychological treatment played any important role whatsoever in relieving the allergic symptoms of the patient.

There is no question but that hypnosis, and other forms of psychiatric treatment, occupy an important and very respectable place in the treatment of allergic disease; but I seriously doubt if the psychiatric approach will ever justifiably assume the dominant role.

The only notable exception might be in the neurotic adult patient, who has recovered from a severe childhood allergy, but whose strong "psychiatric residual" causes him, under certain circumstances, to re-enact certain "allergic" symptoms. In such a case, the psychiatric factor is unquestionably dominant; and hypnosis could very well be the most effective treatment. However, contrary to general opinion, such cases are surprisingly uncommon.

For the vast majority of patients with atopic allergy there is not, as yet, any substitute for the following principles of treatment:

(1) *Avoidance of the offending antigen or antigens.*—This is imperative in all cases of food allergy, and all cases of "environmental" allergy (house dust, feathers, animal danders, &c.).

(2) *Control of infection.*—Acute or chronic bacterial infections, involving any organ or system of the body, will usually aggravate atopic allergy manifestations, even though the latter may be expressed in an entirely different organ or system. Prompt treatment with antibiotics is generally indicated.

(3) *"Desensitisation" treatment.*—This is often a very important aspect of the treatment of "environmental" allergy, although not necessarily so in small children and infants. It is the only effective treatment for pollen allergy, regardless of the patient's age.

CHARLES R. COWAN
U.S. Army Hospital, Paris. Chief of Allergy Service.

METHOD FOR THE ASSAY OF PROPERDIN

SIR,—The work of Pillemer et al.[1] with properdin showed the important role of aspecific factors in natural resistance to infection and illustrated the interesting interactions of this principle with the components of the C′. It can now be said that both these points have been confirmed.[2-6] Some difficulties are met, however, in carrying out the assay of properdin, as proposed by the discoverers of this factor. It has therefore been suggested that properdin activity be measured by other methods based on different principles (hæmolysis of tanned cells, bacteriolytic activity, &c.). Our experience has not, however, been entirely satisfactory with these procedures.

In recent months we have tested a new method for the estimation of properdin with better results. The principle is that described by Pillemer et al.[1] which uses a polysaccharide prepared from yeast cells—zymosan.

Our technique entails careful absorption of the sample of properdin by double incubation at 17° C with a standardised amount of inulin, an insoluble polysaccharide which has some advantages over zymosan.[3] Serial dilutions of the properdin-inulin complex are then incubated for one hour at 37° C with a fixed amount of RP (properdin-free serum) formed from the supernatant of the tube previously incubated at 17° C, and 1 ml. of sensitised cells is added.

The optical density of hæmolysis, read photometrically, is inversely proportional to the properdin value. The C′3 titre of the sample under examination is each time determined by R3 (C′3-free serum). Controls are necessary to ascertain total absorption of properdin and the reliability of the other reagents.

With this procedure it is possible to overcome some difficulties of Pillemer's method for the preparation of suitable RP. As is known, only a few sera (5–10%) prove useful for the preparation of RP. The RP prepared from the sample under examination is a good reagent for the properdin determination of the same serum. On the other hand, in the procedure here outlined the C′3 activity of the system is precisely determined, while in Pillemer's method no reference is made to the C′3 titre of the sample test.

We have performed more than 60 properdin determinations with constant and reproducible results. In normal subjects properdin varies within narrow limits. The value is lower in older than in young people. Research on sera in pathological conditions is now in progress.

Institute of Medical Pathology, University of Genoa. V. BIANCHI
G. GHIRARDO.

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2. Isliker, H. C., Linder, E. *Vox Sanguinis*, 1958, **3**, 23.
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4. Leon, M. A. *J. exp. Med.* 1956, **103**, 285.
5. Barlow, J. L., Vunakis, H. v., Levine, L. *Fed. Proc.* 1957, **16**, 405.
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GLUCURONIDE SYNTHESIS IN FŒTAL LIVER AND KIDNEY

SIR,—Glucuronides are synthesised in adult liver by enzymic transfer of glucuronic acid from uridine diphosphate glucuronic acid (U.D.P.G.A.) to an acceptor substance,[1 2] which can be bilirubin.[3] It is known that certain newborn jaundiced infants are unable to transfer glucuronic acid to bilirubin in this manner.[4]

Recent work,[5] using *o*-aminophenol and (−)-menthol as acceptor substances, has shown a similar defective transference to be characteristic of fœtal liver and kidney in the guineapig, mouse, and probably other species. In the liver, and possibly in the kidney, the phenomenon is explained by deficiency of both the enzyme (U.D.P.-transglucuronylase) and U.D.P.G.A. Levels of both increase up to birth, and it seems that the amount of liver U.D.P.G.A. available is to some extent a limiting factor. That the same microsomal enzyme is being studied as the one transferring glucuronic acid to bilirubin is probable from the reduced synthesis of both phenyl and bilirubin glucuronides in congenitally jaundiced adult humans and rats.[6]

By the kind cooperation of Prof. J. Walker and the staff of the department of midwifery, Queen's College, two normal human fœtuses of 3–4 months were studied by this method. In both, negligible amounts of liver enzyme and U.D.P.G.A., or of kidney glucuronide formation, were found. Results were also negative for placenta.

It may be that certain types of neonatal jaundice are due to persistence of this fœtal metabolism, particularly in premature infants. Administration of U.D.P.G.A. might therefore prove of use, where its lack is the limiting factor, but there seems no explanation of the claimed relief of this condition by oral treatment with glucuronate,[7] an ion which does not increase the enzyme action in vitro.[1] Attempts to induce glucuronide formation by administration of glucuronidogenic drugs could lead, in cases of low U.D.P.-transglucuronylase, to competition with bilirubin at the already deficient enzyme molecules.

Biochemistry Department, Queen's College, Dundee. G. J. DUTTON.

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Obituary

Sir ARNOLD STOTT

J. G. W. writes:

Generations of Westminster men will remember with gratitude and affection the clinical teaching of the late Sir Arnold Stott, particularly, perhaps, for two of its outstanding qualities. One was the thoroughness of the clinical examination from head to toe; the other was the superb bedside manner—the humblest and poorest of outpatients would receive a "Madam" the graciousness of which would have gladdened the heart of a duchess.

Parliament

QUESTION TIME

Radioactive Fallout

Mr. T. E. WATKINS asked the Prime Minister whether, in view of the strong representations from Wales concerning the periodic tests for radioactive fallout, he would give instructions that reports are to be written in a non-technical form easily understandable to the public; and whether, to reassure the population in the upland areas of Wales, he would publish in simple non-technical terms the incidence of fallout and the level of strontium 90 in these areas, and give in non-scientific terms information which would help lay persons in assessing the danger from strontium 90 fallout.—The PRIME MINISTER: We are considering whether we can improve the presentation of the results of measurements of fallout. I would point out, however, that the assessment of the significance of these results is a complicated and technical matter. The forthcoming report of the United Nations Scientific Committee on the Effects of Atomic Radiation will, I understand, contain an up-to-date assessment of the health hazards due to radiation.

Mr. WATKINS: Will the Prime Minister look at this matter again because in Wales people are getting alarmed and we understand that water in Wales is to be tested for strontium? All the people would like to know in simple language what it really means to them and whether they can carry on earning their livelihood at sheep farming, particularly in the Welsh hills.—The PRIME MINISTER: In simple language, I am advised that the levels do not constitute any danger to the human population, but there is always rather a difficulty in trying to express these highly technical results in too simple a form because one might then be accused of not keeping precisely the balance. The Prime Minister added that a further report by the Medical Research Council on the 1957 fallout figures would be issued in the next few days.

Financing Local Authority Mental Health Services

Mr. ARTHUR BLENKINSOP asked the Minister of Health what financial assistance was to be given to local authorities to enable them to establish and develop services for the care and welfare of such of the mentally sick and defective patients as could now be discharged from hospitals and institutions.—Mr. DEREK WALKER-SMITH replied: Expenditure by local authorities on the development of these services already qualifies for specific Exchequer grant and, on the assumption that the Local Government Bill is passed in substantially its present form, will be taken into consideration in the proposed new general grant. I have also informed local-authority representatives that I propose to assist authorities, where this is possible, by letting them have, for a purely nominal consideration, suitable small hospital buildings that can be spared. Mr. BLENKINSOP: Is the Minister not aware that the administrative changes that he has already proposed for mental hospitals will be rendered utterly nugatory unless there is fresh provision of finance? Does he not agree that every local authority expects to hear from him that steps have been made available to enable them to take the weight of the cases which are now in their mental hospitals? Mr. WALKER-SMITH: The 50% grant of expenditure on local-authority services and the small capital subsidy will both be taken into the general grant under the new legislation. As to finance, where I can help is to recommend an issue of loan sanction for capital work in the mental health service at a higher level than in recent years. That I propose to do in the immediate future. Mr. BLENKINSOP: Did not the Royal Commission clearly state that in its view extra finance must be made available, particularly in view of the Government's block grants taking over the old percentage grants? Is it not a smack in the eye to local authorities who sincerely want to take over the burden that the hospitals have been bearing in the past? Mr. WALKER-SMITH: The Royal Commission said that it had had in mind recommending an Exchequer grant of up to 75% for a limited fixed period but it recognised at the same time that the introduction of the general grant might make that recommendation inappropriate.

University Students' Grants

Mr. GEOFFREY LLOYD, Minister of Education, announced that, in conjunction with the Secretary of State for Scotland, he had set up a committee with the following terms of reference:

"To consider the present system of awards from public funds to students attending first degree courses at universities and comparable courses at other institutions and to make recommendations."

The committee would, therefore, consider the kinds of awards to be made from public funds, the method of selecting students for such awards, and the principle of the hardship test required by the law as it now stands. Sir Colin Anderson had accepted the Government's invitation to act as chairman.

Key Industry Duty on Drugs

Mr. JULIAN SNOW asked the President of the Board of Trade if he would re-examine, under the terms of the Safeguarding of Industry Act 1921 and subsequent amending legislation, the key industry duty payable on steroid hormones and certain antibiotics and vitamins, in order to satisfy himself that prices charged to the National Health Service in respect of certain drugs are reasonable and are made controllable by varying such key industry duties in the light of recent pharmaceutical discoveries and production in the United Kingdom and elsewhere.—Sir DAVID ECCLES replied: Prices of drugs under the National Health Service are a matter for the Minister of Health. If an application by users for a change in the duty on any of these drugs were made to me, I should consider whether any action were called for. Mr. SNOW: While thanking the Minister for that answer, may I ask him whether he is aware that this question was put down rather as a ranging shot with a view to drawing the attention of the Minister of Health to the fact that the powers under this Act may be a way, possibly a small way, to control the high cost of certain drugs in the National Health Service?—Sir DAVID ECCLES: The key industry duty will lapse at the end of this year and will be embodied in the new tariff schedule, in which case charges can be made in a more simple manner.

Medicine and the Law

Doctor for Trial

A DOCTOR has been committed for trial at Warwick Assizes on a charge of obtaining £135, with intent to defraud, from a patient by falsely pretending that he was suffering from a serious liver complaint for which the defendant could obtain expensive drugs.[1]

The magistrates were told that the patient, who was aged 27, went to the doctor with slight stomach trouble. After a cursory examination he was asked to return later. He was then given a two-hour examination during which "various odd wires were attached to his body. [The doctor] kept coming in and out of the room and switching various switches on and off".

The doctor later told the patient that he was suffering from a serious liver complaint which would develop into sclerosis and lead to his death at the age of 40. He could prescribe injections, but they would be expensive as they would have to come from Ireland.

The patient agreed to this treatment and paid £135. The doctor was later than expected in returning from Ireland, and the patient visited another doctor who found him to be healthy. This doctor would say that there was no diagnosis of liver trouble possible with the apparatus of wires and switches which had been used by the defendant.

The defendant reserved his defence to the Assizes.

1. *Times*, June 18, 1958. *Birmingham Post*, June 18, 1958.

Notes and News

A NEW POLIOMYELITIS CENTRE

ON June 25 the Earl of Limerick, chairman of the Medical Research Council, opened the laboratory buildings of the poliomyelitis centre which is being set up at the Hendon Isolation Hospital, London. Lord Cottesloe, the chairman of the North West Metropolitan Regional Hospital Board, recalled that in 1951 the Poliomyelitis Committee of the Royal College of Physicians of London, under the chairmanship of Sir Charles Symonds, had suggested that a research unit was needed for the investigation of problems concerned with the established disease, and donations of £12,000 from the National Fund for Poliomyelitis Research and of £8000 from the Sir William Coxen Trust had now enabled the laboratory to be built.

As it was thought essential that research should be carried out during the infectious stage of the disease as well as later, it was decided to build the centre at an infectious diseases hospital in close touch, geographically and administratively, with an orthopædic hospital. On the recommendation of Mr. H. J. Seddon, who was responsible for the planning of the centre, Hendon Isolation Hospital was chosen. Over many years the hospital has worked in close cooperation with the Royal National Orthopædic Hospital at Stanmore, and the secondment of nurses and physiotherapists from Stanmore to Hendon will ensure that patients are looked after by the same staff at the two hospitals. Dr. A. B. Kinnier Wilson, a Medical Research Council worker, already attached to the Royal National Orthopædic Hospital where he was working on respiratory problems in poliomyelitis, is now in charge of the laboratory at Hendon, supported by a number of clinicians. If work on poliomyelitis comes to an end the situation of the centre and its link with the Virus Reference Laboratory at Colindale make it a suitable place for the investigation of other virus disorders affecting the nervous system.

The Institute of Orthopædics of the University of London is responsible for the affairs of the centre, but because of its intimate connection with the Hendon Isolation Hospital a coordinating committee has been appointed on which members of the regional medical service, as well as of the Institute of Orthopædics and Royal National Orthopædic Hospital, will serve.

The building is of ingenious design. It is inexpensive and made of a Malayan hardwood called keruing which is as hard as teak, has excellent insulating properties, and needs neither paint nor other preservative. The laboratory was designed by Mr. Lindsay Drake, A.R.I.B.A., of Fry, Drew, Drake, and Lusdun, with the aid of Mr. Michael Smythe, A.R.I.B.A., of the Nuffield Foundation.

A FAMILY GUIDE

THE family of a patient who has had a mental breakdown are often frightened and unhappy. They are faced with an illness which they do not understand and therefore fear. Though they are anxious to help, they are uncertain how best to do so. They may feel cut off from the patient by the change that has come over him; they may feel cut off from their neighbours by an unreasonable feeling of shame. Though the healthy and growing change in the public attitude towards mental illness is steadily easing many of these difficulties, there still remains room for the useful guide for the patient's family which the National Association for Mental Health have published.[1]

In the course of relating the story of Jim Thomas who had a mental breakdown, and Alice his wife who had to cope, the booklet gives a clear and honest description of our mental health services and procedure for admission to hospital. It does not suggest that they are perfect, but it makes clear that they can offer help and the hope of recovery to most patients. If community treatment is to prove as successful as we all hope, the family will play an increasingly important part in the patient's treatment; but home is not necessarily the best place for the patient at every stage of his illness. The guide gives a good description of life in hospital, from the point of view of the patient and his relatives, and explains that the family should not feel guilty for arranging for the patient to go there; their turn will come later in helping him to adjust himself to normal life again after he returns home.

Illness, mental or physical, must throw a burden on any family. This guide will help the families of the mentally ill to shoulder theirs with confidence and courage.

1. Mental Breakdown. 1958. Pp. 28. 2*s*. 6*d*. Obtainable from the Association, 39, Queen Anne Street, London, W.1, postage 4*d*.

AN OPERATING-THEATRE SPOTLIGHT

Mr. P. Dawson-Edwards and Dr. W. N. Vellacott write:

One of us (P. D-E.) has twice recently described parallel-beam spotlights which it was considered could be made "at home" by hospitals with engineers willing and able to undertake this type of work.[1] The majority of hospitals, however, are probably not in this position, and a commercial firm was therefore approached with a view to the production of such a spotlight. This lamp is now on the market.

Fig. 1—Close-up of lamp showing easily detachable filter holder.

It is basically the smaller Lucas "Flame-thrower", a lamp noted for its extremely powerful parallel beam. to ensure that the beam is virtually "cold", it is made to pass through a disc of Chance's ON 20 glass, which filters out 90% of the heat and yet transmits 90% of the light. This filter is mounted in a slotted holder which spaces it from the lamp, thus allowing it to be cooled on both sides. The holder is neatly clipped to the lamp housing and can readily be removed for cleaning by releasing the two retaining screws on the front of the lamp (fig. 1). An aluminium bulb-shield ensures that there is no dazzle except in the direct line of the beam. The use of a special axial coiled coil bulb provides an even pattern of light of 7 in. diameter which never requires refocusing.

The lamp is mounted on a specially designed 'Anglepoise' arm which makes adjustment both easy and positive through an almost universal range of movement. A plastic handle is fitted to direct the beam. The anglepoise arm can itself be swivelled on the main column. The base of this column, suitably weighted, contains a 12-volt transformer. The finish is in cream with chromium-plated lamp and fittings, and the wheels are of the regulation conducting type (fig. 2).

Fig. 2—Complete lamp showing base with fully enclosed transformer.

1. *Lancet*, 1955, i, 849; *ibid.* 1957, ii, 525.

The lamp has been thoroughly tested. It has been found particularly helpful in operations deep in the thorax, the abdomen, or the pelvis; it is usually best used in conjunction with normal overhead lighting, and sometimes only for quite short periods during an operation. It has also found favour with ophthalmic surgeons, and it has been in constant use in casualty departments. The spotlight is always in focus, is very bright, and is astonishingly easy to manœuvre.

This spotlight may be obtained from Messrs. Herbert Terry and Sons Ltd., Redditch, or their agents.

University of London

The board of governors of Queen Charlotte's Hospital and the Chelsea Hospital for Women have set aside £50,000 of their endowment funds for the endowment of a chair of obstetrics and gynæcology at the Institute of Obstetrics and Gynæcology.

University of Leeds

At recent examinations the following were successful:

M.B., Ch.B.—Margaret Barber, Pauline Bittiner, Norman Carr, Frank Carter, Margaret E. Coles, A. J. K. Dore, M. W. Flowers, Gillian M. Foster, R. D. Jackson, J. N. Lambton, P. B. Pickles, Stanley Sorkin, Freda M. Tomlinson, B. K. Turnbull, R. K. Wright.

D.P.M.—John Blackburn, Margaret W. Galley, Mary Jones, H. B. Kidd, J. T. Rose, Brian Ward.

University of Liverpool

Dr. K. McCarthy and Dr. K. R. Dumbell have been appointed senior lecturers in bacteriology, and Dr. J. L. Braithwaite and Dr. E. W. Macmillan senior lecturers in anatomy.

University of Manchester

At a recent examination the following were successful:

M.B., Ch.B.—J. W. Aspinall, Roy Battye, F. H. Brindle, D. B. Brookes, J. E. Brooks, A. L. Buckley, Eric Charles, P. J. Cox, J. S. Cumming, Barry Deakin, B. H. Delany, G. G. Duckworth, R. M. Flinn, Joyce Harris, Roy Haworth, Patricia A. Hegarty, Raymond Holmes, Alexander Hopkins, W. H. Isbister, Maria Z. Kozubowska, R. J. Lawton, I. P. McEwan, A. C. Peterson, J. D. Rhodes, P. H. Roberts, Martin Ryan, Elizabeth M. Spencer, Roy Statham, Garo Tahta, Peter Watson, J. M. Watts, B. K. Wignall, J. D. G. Williams, S. K. Wood, P. B. Wrigglesworth.

Queen's University, Belfast

Dr. T. K. Marshall has been appointed to a lectureship in pathology (forensic medicine).

Royal College of Surgeons of England

Faculty of Anæsthetists.—Dr. G. S. W. Organe has been elected dean of the faculty for the coming year, and Prof. E. A. Pask vice-dean.

Royal College of Physicians of Edinburgh

Dr. Jessie Macgregor prize for medical women.—An award of this prize, competition for which is open to women who are graduates in medicine of the University of Edinburgh or who have taken the Scottish triple qualification, will be made in November to the applicant who presents the best record of original work in the science of medicine. Applications must reach the Convener of Trustees, Royal College of Physicians, 9, Queen Street, Edinburgh, 2, by Oct. 31.

British Association of Urological Surgeons

The following have been elected officers and members of council for 1958–59:

President, Mr. Arthur Jacobs; immediate past-president, Mr. R. H. O. Il. Robinson; vice-president, Mr. Hugh Donovan; hon. treasurer, Prof. V. W. Dix; hon. secretary, Mr. J. D. Fergusson; hon. editorial secretary, Mr. N. M. Matheson; members of council, Mr. F. R. Kilpatrick, Mr. W. S. Mack, Mr. T. J. Millin, Mr. R. A. Mogg, Mr. D. S. Poole-Wilson, Mr. N. L. Shepperd, Mr. J. Swinney, and Mr. D. Innes Williams; and (ex officio) the president of the Section of Urology of the Royal Society of Medicine and the chairman of the editorial committee of the *British Journal of Urology*.

International Congress on the Modern Educational Treatment of Deafness

This congress will be held at the University of Manchester from July 15 to 23. Further particulars may be had from Mr. D. M. C. Dale, department of education of the deaf, the University, Manchester, 13.

British Medical Association

Dain Fund.—During 1957–58 the Fund has spent £2300 in grants, helping 23 cases including 7 new ones. Nearly every child needs help over a period of years, and, as school fees are mounting and the help required increases, subscribers are asked to continue their support and to enlist the support of others.

Dr. J. A. Fraser Roberts has been elected president of the Royal Anthropological Society.

Dr. Brian MacMahon has been appointed professor of epidemiology at the Harvard School of Public Health.

Dr. Alex Comfort and Dr. D. S. McLaren are among those who have received this year Ciba awards for research on the problems of ageing.

A meeting of the Society for General Microbiology will be held in the University of Liverpool on Sept. 18 and 19. Further particulars may be had from Dr. B. W. Lacey, department of bacteriology, Westminster Medical School, London, S.W.1.

Caution—be Warned in Rhyme.—Mr. Edmund Quarry, the editor of *Better Health*, has for the past ten years offered his readers pills of good advice in the jam of light verse. His good-natured admonishments have now been collected in a small book (London: Hodgetts. Pp. 65. 4*s*. 6*d*.) which he has illustrated himself.

CORRIGENDUM: *Billy Goes to Hospital.*—We apologise to Prof. R. S. Illingworth and to those readers who were perplexed by last week's reference (p. 1399) to his article "on another page of this issue". Our note about the Guy's booklet was to have appeared with Professor Illingworth's paper, which will be published soon.

Diary of the Week

JULY 6 TO 12

Sunday, 6th

UNIVERSITY COLLEGE HOSPITAL, Gower Street, W.C.1
10.15 A.M. Dr. H. A. Burt: Backache, its Prevention and Treatment.

Monday, 7th

UNIVERSITY OF LONDON
5 P.M. (St. Mary's Hospital Medical School, Norfolk Place, W.2.) Prof. Gerrit Bras (Jamaica): Veno-occlusive Disease of the Liver.

Tuesday, 8th

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.1
5 P.M. Sir Lindor Brown: Mode of Action of Sympathetic Nerves. (Bertram Louis Abrahams lecture.)

INSTITUTE OF CHILD HEALTH, The Hospital for Sick Children, Great Ormond Street, W.C.1
5 P.M. Dr. David Gitlin (Boston): Plasma Protein Metabolism in the Nephrotic Syndrome.

INSTITUTE OF PSYCHIATRY, Maudsley Hospital, Denmark Hill, S.E.5
5 P.M. Prof. George Rosen (New York): Social Stress and Mental Diseases in the 18th, 19th, and 20th Centuries.

Wednesday, 9th

POSTGRADUATE MEDICAL SCHOOL, Ducane Road, W.12
2 P.M. Dr. George Belyavin: Serology of the Influenza Viruses.

Thursday, 10th

ROYAL COLLEGE OF PHYSICIANS OF LONDON
5 P.M. Prof. P. B. Medawar: The Biology of Ageing. (F. E. Williams lecture.)

Appointments

MCARTHUR, MARY I., M.B. Edin., D.P.H.: assistant M.O., South Buckinghamshire area.

WILD, DAVID, M.B. Manc., D.OBST.: assistant divisional M.O., Eccles (near Manchester) area.

WRIGHT, J. T., D.M. Oxon., M.R.C.P.: consultant physician, London Hospital, Whitechapel.

East Anglian Regional Hospital Board:

DAS, N., M.B. Calcutta, D.T.M. & H., D.G.O.: registrar in obstetrics and gynæcology, West Norfolk and King's Lynn General Hospital.

DOCKERY, PATRICIA J., M.B. Dubl., D.C.H.: pædiatric registrar, Ipswich and East Suffolk Hospital.

GIBBON, R. H., M.B. Cantab.: radiological registrar, Norfolk and Norwich Hospital.

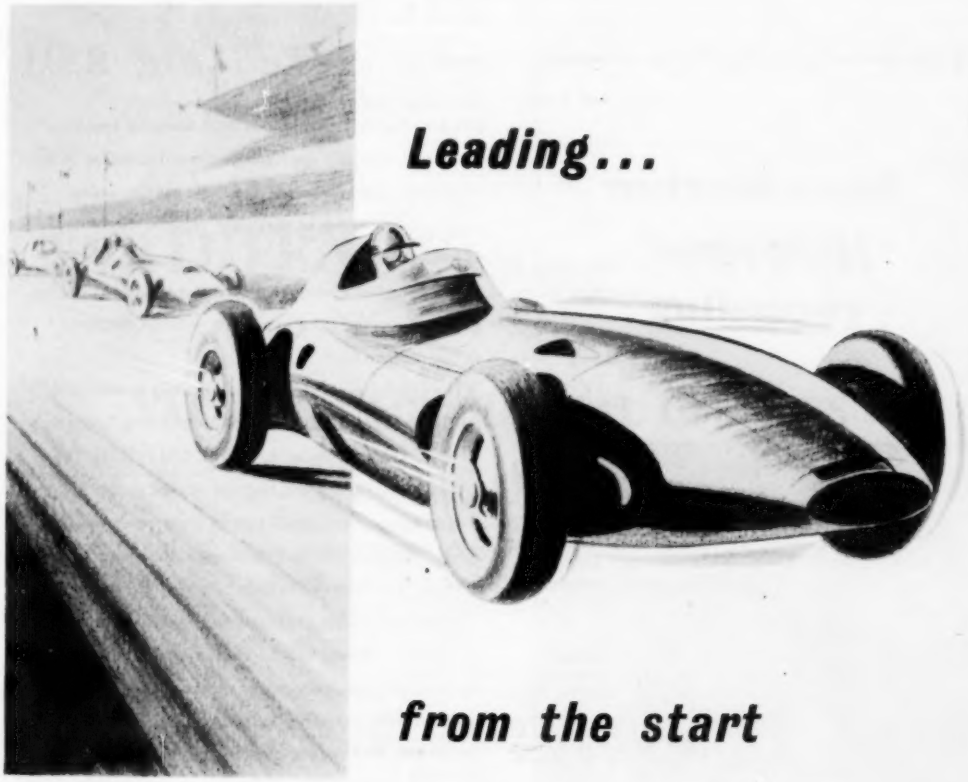
GIBSON, D. S., M.B. Melb.: surgical registrar, West Suffolk General Hospital.

Oxford Regional Hospital Board:

CAREY, R. W., M.B. Dubl., D.O.: part-time consultant ophthalmologist, Oxford/Banbury area.

MOSS, JOHN, M.B. Birm., D.O.: part-time consultant ophthalmologist, Aylesbury/High Wycombe area.

PALMER, J. R., M.B. Lond., D.P.M.: assistant psychiatrist (S.H.M.O.), Fair Mile Hospital, near Wallingford, Berkshire.



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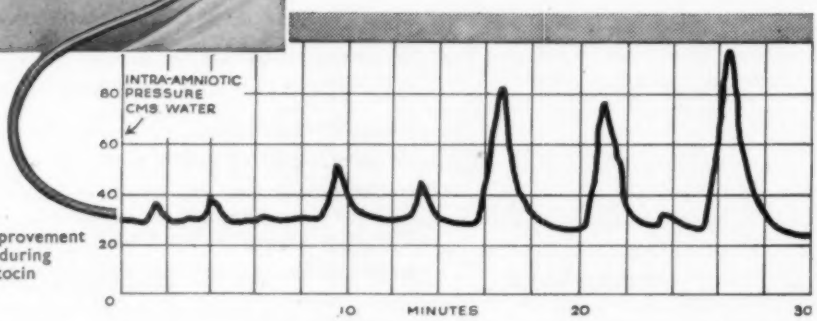

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1. LANCET i, 987, 1949
2. PRACTITIONER, 979 VOL. 164, 1950

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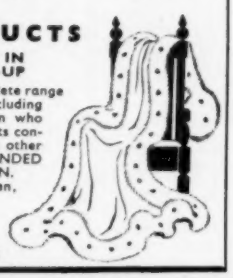

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MOULTON PARK. Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit, and vegetables are supplied to the Hospital from the farm, gardens, and orchards of Moulton Park. Occupational therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL. The seaside home of St. Andrew's Hospital is beautifully situated in a park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North-West side of the Estate a mile of sea coast forms the boundary. Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: Northampton 4354 (3 lines)), who can be seen in London by appointment.

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JAMES HENDERSON, Academic Registrar.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE

A SHORT INTENSIVE COURSE in Occupational Health for General Practitioners will be held at the London School of Hygiene and Tropical Medicine (University of London) from MONDAY 22ND–SATURDAY, 27TH SEPTEMBER, 1958, inclusive. Numbers will be strictly limited.

Fees and allowances are provided for National Health Service practitioners on certain conditions. Other practitioners may attend on payment of a fee of 5 guineas.

Applications should be sent to the Registrar, London School of Hygiene and Tropical Medicine, Keppel-street (Gower-street), London, W.C.1 (from whom further particulars may be obtained), not later than 1st August, 1958.

ST. MARK'S HOSPITAL

AUTUMN COURSE OF LECTURES IN RECTAL SURGERY

5 Lecture Demonstrations, SATURDAYS, 4TH OCTOBER–1ST NOVEMBER, from 9.15 A.M.–12.15 P.M. Intended for final F.R.C.S. candidates. Number limited to 20. Fee 5 guineas.

Application to be made to the Dean of Postgraduate Studies, St. Mark's Hospital, City-road, E.C.1.

THE UNIVERSITY OF LEEDS

DIPLOMA IN PSYCHOLOGICAL MEDICINE

A COURSE for the Diploma in Psychological Medicine will commence in OCTOBER, 1958, if sufficient entries are received. Instruction will be part-time and will occupy approximately 1½ days a week during 9 academic terms (3 years).

Further particulars may be obtained from the Secretary, School of Medicine, Thoresby-place, Leeds, 2, to whom application for admission to the course should be sent as soon as possible.

TANCRED'S STUDENTSHIPS

DIVINITY : MEDICINE : LAW

£100 p.a. each. For men only

The Governors and Trustees of Tancred's Foundation propose to make their annual election of a Student in Physic at Gonville and Caius College, Cambridge, on the result of the Entrance Examination to be held in January, 1959, required from candidates for admission to Gonville and Caius College, Cambridge, who intend to read medicine.

Candidates must have been born in England, Scotland or Wales and be members of the Church of England and unmarried. Candidates must be within the ages of 17 years and 22 years on 1st October, 1959. The last day for sending in Petitions is 1st October, 1958.

Further announcements relating to the Divinity and Law Studentships awarded by this Foundation will appear in September, 1958, and February, 1959.

Apply for further particulars and form of Petition stating kind of Studentship and mentioning this paper to the Clerk, Tancred's Foundation, 28, Lincoln's Inn-fields, London, W.C.2.

MEDICAL RESEARCH COUNCIL require a Bacteriologist, preferably medically qualified, at their Group for Research on Drug Sensitivity in Tuberculosis, Department of Bacteriology, Postgraduate Medical School of London, Ducane-road, London, W.12, to undertake full-time research on the chemotherapy and epidemiology of mycobacterial infections, including the bacteriological control of chemotherapeutic trials in Britain, India and East Africa. Salary, according to age, experience and qualifications, at point on scale £900–£100–£1100 p.a., plus £30 p.a. London allowance. Initial appointment for 3 years, subject to confirmation after 1 year, with superannuation provision.

Applications, with the names of 2 academic referees should be sent to Dr. D. A. MITCHISON, Honorary Director of the Group, at the above address.

POSTGRADUATE MEDICAL SCHOOL OF LONDON, Ducane-road, W.12. REGISTRAR (chemical pathology) required 1st October. Duties include routine work, demonstrations to the D.C.P. course and research. Equivalent of National Health Service terms.

Applications, with the names of 2 referees, to the Dean, by 11th July.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON). Applications are invited for the post of LECTURER (MEDICAL) IN HISTOPATHOLOGY from medical graduates with some experience in medical laboratory work. Salary scale £1150–£1750, with children's allowances and F.S.S.U. benefits.

Applications, including the names of referees, should reach The Secretary, Department of Pathology (from whom further particulars can be obtained), by 1st August, 1958.

THE UNITED CARDIFF HOSPITALS. Medical Professorial unit. Research Fellowship. Applications are invited for appointment to a RESEARCH FELLOWSHIP IN MEDICINE in the Professorial Unit of the Welsh National School of Medicine at the Cardiff Royal Infirmary. The appointment, at a salary of £1210 with superannuation, is normally tenable for a period of 2 years. The person appointed will be able to take part in the teaching and routine work of the Department.

Further particulars about this appointment, and forms of application, are available from the Secretary to the Board at the Cardiff Royal Infirmary, Newport-road, Cardiff, and should be returned within 14 days of the appearance of this advertisement.

EDINBURGH UNIVERSITY GENERAL PRACTICE TEACHING UNIT. This Unit is carrying out a detailed job analysis and morbidity study of the work of a combined practice comprising 5000 patients. A medically qualified RESEARCH ASSISTANT is required for a period of 1 year, beginning 1st October, 1958. The salary will be at the rate of £1000 p.a. As well as carrying out specific duties under the supervision of the Director, the successful applicant will be given the opportunity of studying both the teaching and research methods employed in the Unit. Preference will be given to applicants having previous experience of general practice.

Applications, giving full particulars, should be sent to the Director, Edinburgh University General Practice Teaching Unit, 39, Cowgate, Edinburgh, not later than 1st August, 1958.

EDINBURGH UNIVERSITY GENERAL PRACTICE TEACHING UNIT. There will be a vacancy in this Unit for a TRAINEE ASSISTANT under the conditions of the National Health Service Acts, with effect from 1st October, 1958.

Applicants should submit full particulars to the Director, Edinburgh University General Practice Teaching Unit, 39, Cowgate, Edinburgh, not later than 30th August, 1958.

UNIVERSITY OF BIRMINGHAM. Faculty of Medicine. Applications are invited for the post of Whole-time LECTURER IN OBSTETRICS AND GYNÆCOLOGY (clinical) to work within the Professorial Unit and to begin duties as soon as possible. Salary range £900–£1950 (plus F.S.S.U. and family allowance), depending on age, experience and qualifications.

Applications (9 copies), together with the names of 3 referees, should be sent not later than 18th July, 1958, to the Assistant Registrar, The Medical School, Birmingham, 15, from whom further particulars may be obtained.

UNIVERSITY OF BIRMINGHAM. Faculty of Medicine. Applications are invited for the post of Whole-time LECTURER IN MEDICINE (clinical) with clinical duties in the Medical Professorial Unit of the Queen Elizabeth Hospital. There are opportunities for research into problems of cardiovascular function. Salary range £900–£1950 (plus F.S.S.U. and family allowance), depending on age, experience and qualifications.

Applications (9 copies), together with the names of 3 referees, should be sent not later than 5th July, 1958, to the Assistant Registrar, The Medical School, Birmingham, 15, from whom further particulars may be obtained.

UNIVERSITY OF BIRMINGHAM. Faculty of Medicine. Applications are invited for the post of Whole-time LECTURER IN SURGERY (clinical) with clinical duties in the Surgical Professorial Unit of the Queen Elizabeth Hospital. The successful candidate will be required to begin duties not later than 1st October, 1958. Candidates must possess the Fellowship of the Royal College of Surgeons of England. Good laboratory facilities for research are available within the Unit. Salary range £900–£1950 (plus F.S.S.U. and family allowance), depending on age, experience and qualifications.

Note: this Lectureship is additional to the post recently advertised.

Applications (9 copies), together with the names of 3 referees, should be sent not later than 18th July, 1958, to the Assistant Registrar, The Medical School, Birmingham, 15, from whom, further particulars may be obtained.

UNIVERSITY OF BRISTOL. Applications are invited for the post of ASSISTANT LECTURER (Grade III) or DEMONSTRATOR IN PHYSIOLOGY (Chemical Physiology). Initial salary £700–£1100 p.a., according to qualifications and experience, together with superannuation and children's allowances.

Applications, with the names of 3 referees, should be forwarded so as to reach the undersigned, from whom further particulars may be obtained, not later than 21st July, 1958.

H. C. BUTTERFIELD, Registrar and Secretary.

UNIVERSITY OF CAMBRIDGE. Applications are invited for the post of ASSISTANT DIRECTOR OF RESEARCH in the Department of Medicine from 1st October, 1958, to work in the field of medical psychology. The appointment will be subject to the Statutes and Ordinances of the University and will be for a period not exceeding 5 years in the first instance. The pensionable stipend of an Assistant Director of Research in this Department is £1200 a year, rising by annual increments of £100 to £1700 a year.

Candidates should send 10 copies of their application, together with the names of not more than 3 referees, to Dr. G. A. GRESHAM, Secretary of the Appointments Committee of the Faculty of Medicine, The Medical School, Tennis Court-road, Cambridge, so as to reach him not later than 16th July, 1958.

THE UNIVERSITY OF LIVERPOOL. Department of STUDIES IN PSYCHOLOGICAL MEDICINE. Applications are invited for the post of RESEARCH ASSISTANT IN PSYCHOLOGICAL MEDICINE at a salary within the range £1000–£1300 p.a., according to qualifications and experience. The appointment will be tenable for 1 year and may be renewed for a second year.

Applications, stating age, academic qualifications and experience, together with the names of 3 referees, should be received not later than 19th July, 1958, by the Registrar, from whom further particulars of the conditions of appointment may be obtained.

THE UNIVERSITY OF LIVERPOOL. Applications are invited for the post of Whole-time LECTURER in the Department of Child Health, at an initial salary within the range £1200–£1550 p.a., according to qualifications and experience. Clinical responsibilities and research facilities under the general direction of the Professor of Child Health will be available within the Department and duties will include the conduct of clinics for the Local Health Authority. Duties will commence on 1st October, 1958.

Applications, stating age, academic qualifications and experience, together with the names of 3 referees, should be received not later than 26th July, 1958, by the Registrar, from whom further particulars of the conditions of appointment may be obtained.

UNIVERSITY OF DUBLIN. Trinity College. Applications are invited for the position of LECTURER IN PHARMACOLOGY, working in the Department of Physiology. The position will offer opportunity for research. The salary will be in the range £1425–£1900, and the Lecturer will be a member of a non-contributory insurance pension scheme.

Further information may be obtained from the Registrar, Trinity College, who will accept applications (3 copies) until 1st August, 1958.

AUSTRALIA. UNIVERSITY OF SYDNEY. Applications are invited for the position of LECTURER IN PHARMACOLOGY. The successful applicant will be required to assist in giving a course of lectures to students in veterinary science and to have had some previous teaching experience in this field. It is also desirable that applicants should have some research experience. An interest in cardiovascular pharmacology would be most in line with the work in this department. The salary for a Lectfirer is within the range £A1500–£A90–£A2100 p.a., plus cost-of-living adjustment, and will be subject to deductions under the State Superannuation Act. The commencing salary will be fixed according to the qualifications and experience of the successful applicant. Under the Staff Members' Housing Scheme in cases approved by the University and its Bankers, married men may be assisted by loans to purchase a house.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in Australia and London, is 4th August, 1958.

UNIVERSITY OF OTAGO. New Zealand Medical RESEARCH COUNCIL. Psychiatric Research Officer. Applications are invited for a new post of SENIOR MEDICAL RESEARCH OFFICER with the New Zealand Medical Research Council. Applicants should be medically qualified and have had either a basic scientific training in physiology or pharmacology, a higher degree in medicine, or psychiatric training. As a scientific liaison post linking psychiatry, general medicine and pharmacology, the initial aim is to make objective studies of psychiatric interest, possibly in the field of psychopharmacology. Liberal facilities will be available in the Departments of Psychiatry and General Medicine and Pharmacology. The salary range for Senior Medical Research Officer is £1640–£1940 p.a. at which point there is a promotion bar. For further particulars inquiries may be directed to the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1.

Applications should be lodged with the Chairman, Psychiatric Research Committee, Department of Medicine, Medical School, Dunedin, New Zealand, on or before 15th August, 1958.

UNIVERSITY OF OTAGO, Dunedin, New Zealand. The Council of the University of Otago has under consideration the appointment of a DEAN OF THE MEDICAL FACULTY to succeed Sir Charles Hercus who will retire in February, 1959. The Council's Advisory Committee will welcome applications or suggestions of persons suitable for consideration. Further particulars may be obtained from the Registrar, University of Otago, or from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1.

Applications and communications should reach the Registrar, University of Otago, Dunedin, New Zealand, by 31st July, 1958.

UNIVERSITY OF WESTERN AUSTRALIA.

SENIOR LECTURESHIP IN HISTOLOGY.

LECTURESHIP IN ANATOMY.

Applications are invited for the above positions. The salary range for Senior Lecturers is at present £A2150–£A2500 p.a. The salary range for Lecturers is £A1550–£A2050 p.a. The commencing salary will be determined on the basis of the qualifications and experience of the appointee. An allowance is made towards travelling expenses and housing assistance is available.

Further particulars and information as to the method of application may be obtained from the Secretary, Association of Universities of the British Commonwealth, 36, Gordon-square, London, W.C.1. The closing date for the receipt of applications, in Australia and London, is 11th August, 1958.

Hospital Services: Senior Appointments

HOSPITALS FOR DISEASES OF THE CHEST. Board OF GOVERNORS. Applications are invited for the post of RESEARCH BACTERIOLOGIST for work particularly concerned with the chemotherapy of tuberculosis. Applicants should possess a medical degree and sound experience of bacteriology methods. The appointment is for 1 year in the first instance, renewable for 1 further year. Salary £f653 15s.–£52 10s.–£2126 5s. p.a.

Applications by 9th August, 1958, to KENNETH A. F. MILES, Secretary to the Board, Brompton Hospital, S.W.3.

NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD.

(1) CONSULTANT PSYCHIATRIST, 3 half-days a week, British Hospital for Functional Nervous Disorders, 72, Camden-road, N.W.1.

Applications before 15th August, 1958.

(2) CONSULTANT ANÆSTHETIST, whole-time or maximum sessions, Whittington Hospital, Highgate-hill, N.19 (1081 Beds).

Applications before 11th August, 1958.

Hospitals may be visited by direct appointment.

Application forms obtainable from and returnable to Secretary, North West Metropolitan Regional Hospital Board, 11A, Portland-place, W.1.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications are invited from registered medical practitioners for the appointment of Part-time CONSULTANT PLASTIC SURGEON. Applicants must be Fellows of the Royal College of Surgeons (England). Appointment to commence 1st October, 1958.

Applications, giving details of qualifications and experience, together with the names of 3 referees, should be sent to the Secretary to the Board of Governors not later than 22nd July, 1958.

ST. MARK'S HOSPITAL, City-road, London, E.C.1. Applications invited for the post of CONSULTANT SURGEON for 4 sessions per week. Duties to commence 1st January, 1959.

Detailed applications, names 3 referees, to reach the Secretary, Board of Governors, The Hammersmith, West London and St. Mark's Hospitals, Ducane-road, London, W.12, by 23rd August.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Whole-time SENIOR CASUALTY OFFICER, Burton-on-Trent General Hospital. Salary within scale £1653–£2126 p.a. Tenable for 4 years. Higher qualification an advantage.

Applications (15 copies), stating age, qualifications, nationality, present and previous appointments and details of 3 referees, to Secretary, 10, Augustus-road, Birmingham, 15, by 7th August, 1958.

CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Anæsthetics. Locum ANÆSTHETIST (5 half-days per week) required pending substantive Consultant appointment. Consultant, Senior Hospital Medical Officer or Senior Registrar's pay, according to grading of successful applicant. Group covers Royal West Sussex and St. Richard's Hospitals, Chichester, and Bognor, Midhurst and Petworth Hospitals.

Apply, Group Secretary, 174, Broyle-road, Chichester.

EAST ANGLIAN REGIONAL HOSPITAL BOARD. CONSULTANT ANÆSTHETIST (whole-time or maximum part-time), King's Lynn area. Main hospital West Norfolk and King's Lynn General Hospital (146 Beds). Wide experience in specialty and higher qualification essential.

Applications (8 copies), stating age, experience and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 28th July, 1958. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary, St. James' Hospital, King's Lynn.

LEEDS REGIONAL HOSPITAL BOARD.

CONSULTANT in Obstetrics and Gynæcology (maximum part-time)—Huddersfield (6 sessions) and Halifax (3 sessions). Person appointed to reside in the Huddersfield/Halifax area. Initial duties in Huddersfield will be mainly obstetric pending the provision of additional gynæcological beds in a new general hospital at present being built.

CONSULTANT in Anæsthetics—Ilkley, Otley and Menston (8 notional half-days per week). Duties mainly at Otley General Hospital (14 hours per week) with additional duties at Scalebor Park and Menston Mental Hospitals. Person appointed to reside in the Otley area.

Whole-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer grade)—Goole, Pontefract and Wakefield. Person appointed to reside in the Goole/Pontefract area.

Applications (12 copies), stating age, qualifications and details of present and previous appointments with dates, and names and addresses of 3 referees, to the Secretary, Park-parade, Harrogate, by 29th July, 1958.

LINGFIELD HOSPITAL SCHOOL FOR EPILEPTIC CHILDREN. Applications are invited for the post of DEPUTY MEDICAL SUPERINTENDENT. Neurological or pædiatric experience desirable. Mainly medical but some administrative duties. Salary according to the scale for Senior Hospital Medical Officers. A house is available at a nominal rent for a married man. Superannuable under F.S.S.N., to which pension rights are transferable.

Applications, stating age, marital status, full particulars of qualifications and experience and names of 2 referees, to be sent to the Medical Superintendent, Lingfield Hospital School, Lingfield, Surrey.

LIVERPOOL REGIONAL HOSPITAL BOARD. Whiston AND RAINHILL HOSPITALS. Applications are invited for the post of CONSULTANT PATHOLOGIST (whole-time or maximum part-time sessions) with duties at the above Hospitals. Applicants should possess a higher qualification and should have at least 5 years' experience in clinical pathology including at least 3 years in hospital pathology.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 26th July, 1958.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL REGIONAL HOSPITAL BOARD. Applications are invited for the following 2 posts of Part-time CONSULTANT OTORHINOLARYNGOLOGIST.

(*a*) Mainly at hospitals in the St. Helens, Warrington, Ormskirk and Runcorn areas with some duties in the adjacent areas of Lancashire—7 notional half-days.

(*b*) Mainly at Clatterbridge Hospital with some duties at other hospitals in the Wirral area—5 notional half-days.

Applications are also invited for the post of ASSISTANT OTORHINOLARYNGOLOGIST (Consultant) for 2 notional half-days at Bootle, Walton and John Bagot Hospitals. The duties will be mainly at Bootle Hospital, and the person appointed will apportion his time at the other hospitals under the direction of the Senior Consultant in the Group.

Applicants should possess a higher qualification in surgery and have wide experience in E.N.T. surgery.

Forms of application from Dr. T. Lloyd Hughes, Senior Administrative Medical Officer, Liverpool Regional Hospital Board, 19, James-street, Liverpool, 2, to be returned not later than 26th July, 1958.

VINCENT COLLINGE, Secretary to the Board.

LIVERPOOL. THE UNITED LIVERPOOL HOSPITALS. Applications are invited for appointment as CONSULTANT OTORHINOLARYNGOLOGIST of Junior status for duty initially at the Liverpool Ear, Nose and Throat Infirmary. The appointment is for 4 notional half-days a week. Candidates must possess a registrable qualification and either F.R.C.S. (England, Edinburgh or Ireland) and the D.L.O. or F.R.C.S. in Otology.

Applications (1 copy only), giving full particulars of age, qualifications, &c., and details of present and previous appointments, together with the names of 3 persons to whom reference may be made, should reach the Secretary, The United Liverpool Hospitals, 80, Rodney-street, Liverpool, 1, by 26th July, 1958.

MANCHESTER REGIONAL HOSPITAL BOARD.

(*a*) 2 additional Whole-time or Maximum Part-time CONSULTANT RADIOLOGISTS as follows :—

(1) Stockport and Buxton Group of hospitals, mainly at Stockport Infirmary and Stepping Hill Hospitals, but possibly with some duties in the Macclesfield area.

(2) Bolton and District Group of hospitals, mainly at the Bolton Royal Infirmary and Bolton District General Hospital.

Wide experience and higher qualifications essential; appointees to live near their main hospitals. 22nd July, 1958.

(*b*) Whole-time or Maximum Part-time additional CONSULTANT NEUROSURGEON to the unit based on Preston Royal Infirmary and serving the northern part of the region. Wide experience and higher qualifications essential. 24th July, 1958.

(*c*) Part-time (8 half-days weekly) CONSULTANT OPHTHALMOLOGIST to the Rochdale (4 sessions), Bury (2) and Oldham (2) Groups of hospitals. Appointee will have charge of beds in a new ophthalmic unit of 22 Beds at Birch Hill Hospital, Rochdale, and undertake outpatient clinics at Rochdale, Bury and Oldham. Wide experience, higher qualifications essential; appointee to live in area. 26th July, 1958.

(*d*) Whole-time RESIDENT ASSISTANT PSYCHIATRIST (Senior Hospital Medical Officer), Whittingham (Mental) Hospital, near Preston (about 3200 Beds). All modern forms of treatment are undertaken. D.P.M. desirable. 14th July, 1958.

(*e*) Whole-time ASSISTANT PATHOLOGIST (Senior Hospital Medical Officer) for Regional V.D. Serology Laboratory at Withington Hospital, Manchester. Some experience in general pathology and special experience in serology required. 14th July, 1958.

Application forms from the Senior Administrative Medical Officer to the Board, Cheetwood-road, Manchester, 8, to be returned by the dates stated.

MANCHESTER REGIONAL HOSPITAL BOARD. Locum CONSULTANT OPHTHALMOLOGIST required for Wigan and Leigh Group of hospitals for 1 month from 1st August, and possibly longer. 7 half-days weekly. Salary according to personal grading.

Applications, giving details of experience and the names of 2 referees, to be sent to the Secretary, Wigan and Leigh Hospital Management Committee, Knowsley House, Wigan, as soon as possible.

NEWCASTLE REGIONAL HOSPITAL BOARD. CONSULTANT RADIOLOGIST, whole-time or part-time for 9 notional half-days per week, for Hartlepools Group of hospitals—main hospitals General, West Hartlepool (470 Beds), Hartlepools (134 Beds). Population served approximately 132,000.

Applications, with names and addresses of 3 referees, to Senior Administrative Medical Officer, Regional Hospital Board, Benfield-road, Newcastle upon Tyne, 6, within 28 days.

SCOTLAND. SOUTH-EASTERN REGIONAL HOSPITAL BOARD. CONSULTANT RADIOLOGIST (4 sessions) at the Princess Margaret Rose Hospital, Edenhall Hospital, and the Royal Edinburgh Mental Hospitals.

Apply, giving particulars of age, qualifications and previous experience, and the names of 3 referees, to the Secretary, 11, Drumsheugh-gardens, Edinburgh, 3, by 2nd August, 1958.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of CONSULTANT ORTHOPÆDIC SURGEON at the Royal Infirmary, Glasgow. The appointment will be whole-time or on the maximum part-time basis of 9 notional half-days per week.

Applications (16 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, not later than 30 days after the publication of this advertisement.

SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD requires a Whole-time Locum CHEST PHYSICIAN (Senior Hospital Medical Officer grade) for the Chest Services in Portsmouth for the period 27th July–10th September, 1958, inclusive. The main duties will be in the Chest Clinic and Mass Radiography Unit. Remuneration will be in accordance with the terms and conditions of service of hospital medical and dental staff.

Applications, stating age, qualifications and experience, and the names and addresses of 3 referees, to the Area Secretary, Highcroft, Romsey-road, Winchester, by 12th July, 1958.

NEW ZEALAND. THE OTAGO HOSPITAL BOARD, UNIVERSITY OF OTAGO. Assistant Director of Anæsthetic Services and Lecturer in Anæsthetics, Otago Medical School. Applications are invited for the position of ASSISTANT DIRECTOR OF ANÆSTHETIC SERVICES to The Otago Hospital Board and LECTURER in Anæsthetics, University of Otago, from persons holding a degree in Medicine at an approved University and who must either:—

(*a*) Hold a higher qualification in anæsthetics and have had 5 years' or more experience in this specialty; or

(*b*) Have been qualified for a period of 15 years or more and have had 8 years' or more practical experience in anæsthetics.

The salary payable is that under the Hospital Employment (Medical Officers) Regulations, viz: £2040–£2340 p.a. The commencing rate of salary within the scale will be dependent on the qualifications and experience of the appointee and will be determined by the Medical Officers Salaries Grading Committee.

The position is a full-time one and private practice is not permitted. The appointment is subject to termination by 3 months' notice in writing from either side.

Travelling expenses will be paid in accordance with the information contained in the Conditions of Appointment.

Conditions of appointment and application forms may be obtained from the Office of the High Commissioner for New Zealand, 415, The Strand, London, or from the undersigned.

Applications, stating age, qualifications and experience, together with health and chest certificates, and testimonials, will be received by the undersigned until 10 o'clock A.M. on Monday, 29th September, 1958.

W. A. WILLIAMSON, Secretary, Otago Hospital Board.
P.O. Box 946, Dunedin, N.Z.

SHEFFIELD REGIONAL HOSPITAL BOARD. CONSULTANT PHYSICIAN (maximum part-time) required for the Derby Group of hospitals with main duties at the Derbyshire Royal Infirmary. It would be an advantage for applicants to have had paediatric experience as the successful candidate will be on the staff of the Derbyshire Hospital for Sick Children.

Application forms and further details from the Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 26th July, 1958.

SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time CONSULTANT PSYCHIATRIST required, to be designated Medical Superintendent of Kingsway Hospital, Derby. Modern house available.

Application form and further details from Senior Administrative Medical Officer, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield. Forms to be returned by 2nd August, 1958.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. Applications invited for the appointment of Whole-time ASSISTANT CHEMICAL PATHOLOGIST (salary in accordance with Senior Hospital Medical Officer scale) in the above Teaching Hospitals. Experience of general pathology and of chemistry is essential; a higher qualification is desirable.

Applications, with the names of 3 referees, to be sent to the Chief Administrative Officer, The United Sheffield Hospitals, West-street, Sheffield, 1, not later than 19th July, 1958, from whom further details may be obtained.

Hospital Services: Junior Appointments

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (resident) for 1 year in first instance from 29th September, 1958. Holder required as part of his duties to act as Group Admissions Officer, alternate periods of 3 months.

Forms of application obtainable from the Group Secretary, Battersea and Putney Group Hospital Management Committee, St. John's Hospital, S.W.11, to be returned, completed, within 14 days of this advertisement.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. Locum SURGICAL REGISTRAR, resident, 4th August–1st September, 1958, inclusive. F.R.C.S. essential.

Apply Hospital Secretary.

CENTRAL MIDDLESEX HOSPITAL, Park Royal, N.W.10. NORTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time) in Obstetrics and Gynæcology required. Resident or non-resident. Post recognised for M.R.C.O.G. The department consists of 84 obstetrical beds, 50 gynæcological beds, and a large Outpatient Department. Applicants may visit the Hospital by direct appointment. Salary £935 p.a. in the first year, £1061 10s. in the second year. Subject to terms and conditions of service of hospital medical and dental staff.

Application forms from, and returnable to, Group Secretary, Central Middlesex Group Hospital Management Committee, Park Royal, London, N.W.10, by 19th July.

DREADNOUGHT SEAMEN'S HOSPITAL, Greenwich, S.E.10. Part-time CLINICAL ASSISTANT in E.N.T. Department for 1 outpatient session weekly on Wednesday afternoons.

Applications, stating age, nationality, qualifications with dates, appointments held and names of 2 referees, by 18th July to Secretary.

EASTMAN DENTAL HOSPITAL and INSTITUTE OF DENTAL SURGERY (UNIVERSITY OF LONDON), Gray's Inn-road, London, W.C.1. Applications are invited for the full-time non-resident post of ANÆSTHETIST in the grade of Registrar. Remuneration and conditions of service in accordance with national scale. The post is vacant from 1st September, 1958.

Application forms are obtainable from the Director, to whom they should be returned by 21st July, 1958. Canvassing will disqualify.

FULHAM HOSPITAL, St. Dunstan's-road, Hammersmith, W.6. HOUSE SURGEON (2 vacancies). Provisionally registered candidates eligible. Appointments recognised for F.R.C.S. Appointments commence 1st August, 1958, are resident and are limited to 6 months.

Applications immediately on forms obtainable from the Hospital Secretary.

GREENWICH AND DEPTFORD AND SEAMEN'S GROUPS. PATHOLOGICAL SENIOR HOUSE OFFICER vacancy in Group Laboratories. Post recognised for D.Path. of Conjoint Board.

Applications, stating age, qualifications and experience, with names of 2 referees, to Group Secretary, Seamen's Hospital, Greenwich, S.E.10.

LONDON CHEST HOSPITAL. Hospitals for Diseases of THE CHEST. A vacancy occurs 1st September, 1958, for RESIDENT SURGICAL OFFICER. Appointment for 6 months, with prospect of renewal. Post graded as Senior House Officer, or Registrar, according to qualifications and previous surgical experience.

Applications, stating date of birth, qualifications with dates, and previous appointments held, with copies of 3 recent testimonials, should reach the undersigned not later than 7th July, 1958. J. ROBBINS, House Governor.

London Chest Hospital, E.2.

LONDON CHEST HOSPITAL (Country Branch). Hospitals FOR DISEASES OF THE CHEST. REGISTRAR in Clinical Pathology (Registrar grade). A vacancy occurs at the Country Branch, near Letchworth. The appointment is a whole-time one and will be for 1 year in the first instance, and the holder may be resident or non-resident.

Applications, stating age, qualifications with dates, and previous experience, together with copies of 3 testimonials, should be forwarded at once to the undersigned.

J. ROBBINS, House Governor.

London Chest Hospital, E.2.

HIGHLANDS GENERAL HOSPITAL, Winchmore Hill, N.21. HOUSE SURGEON required. Vacant 4th July. Duties mainly orthopædic with some E.N.T. and emergency general surgery. New operating-theatre, outpatient and casualty department. Post recognised for pre-registration service.

Applications, with copies of 3 testimonials and name and address of 1 referee, to Hospital Secretary.

LAMBETH HOSPITAL, Brook-drive, S.E.11. Applications are invited from pre-registration and registered medical practitioners for the appointment of RESIDENT HOUSE SURGEON in the Obstetric and Gynæcological Unit. Appointment is for 6 months from 1st September, 1958. It would be convenient if the successful candidate could carry out a fortnight's locum duty, commencing 18th August, 1958. Hospital recognised for M.R.C.O.G. and D.Obst.R.C.O.G.

Application forms from the Secretary. Self-addressed envelope should be enclosed.

LONDON HOSPITAL, Whitechapel, E.1. Applications are invited for the post of CASUALTY OFFICER (graded Senior House Officer), becoming vacant on 16th August, 1958. The appointment is recognised for the F.R.C.S.

Applications (6 copies), together with 6 copies of 3 recent testimonials, should be received by the undersigned by 12th July, 1958. H. BRIERLEY, House Governor.

MARIE CURIE HOSPITAL, 66, Fitzjohn's-avenue, Hampstead, N.W.3. HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT MEDICAL OFFICER (House Officer grade) required.

Applications, with copies of testimonials, to the Administrative Officer.

MEMORIAL HOSPITAL, Shooters-hill, Woolwich, S.E.18. SENIOR HOUSE OFFICER (Casualty Department). Vacant 8th August. Recognised for F.R.C.S. 6 months' resident appointment and may then be renewed. Salary £819 10s. p.a., less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

MILDMAY MISSION HOSPITAL, Austin-street, London, E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE PHYSICIAN/CASUALTY OFFICER, vacant on 31st July, 1958. Candidates should be in sympathy with the evangelical Christian aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent as soon as possible.

MILDMAY MISSION HOSPITAL, Austin-street, London, E.2. Applications are invited for the pre-registration post of RESIDENT HOUSE SURGEON (post recognised for F.R.C.S.) vacant on 31st July, 1958. Candidates should be in sympathy with the evangelical Christian aims of the Hospital.

Applications and references to be addressed to the Medical Superintendent as soon as possible.

NELSON HOSPITAL, Kingston-road, Merton, S.W.20. HOUSE SURGEON (resident, not pre-registration). Post vacant now. Recognised for F.R.C.S.

Applications, stating age, qualifications, &c., with the names and addresses of 2 referees, should be sent to the Secretary at above address.

POPLAR HOSPITAL, East India Dock-road, E.14. Bow GROUP HOSPITAL MANAGEMENT COMMITTEE. Locum Tenens ANÆSTHETIC REGISTRAR required at above Hospital for the period 15th September–14th December, 1958.

Apply Hospital Secretary (Telephone: EASt 1876).

PUTNEY HOSPITAL, Lower Common, London, S.W.15. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. SURGICAL REGISTRAR (resident), F.R.C.S. For 1 year in the first instance from 1st October, 1958. Holder required as part of his duties to act as Group Admissions Officer, alternate periods of 3 months.

Forms of application, obtainable from the Group Secretary, Battersea and Putney Group Hospital Management Committee, St. John's Hospital, S.W.11, to be returned completed within 14 days.

QUEEN CHARLOTTE'S AND CHELSEA HOSPITALS. ANÆSTHETIST (Senior House Officer) resident post tenable for 6 months from 1st October, 1958, in the first instance, for duties at both hospitals. Post recognised for the purpose of the F.F.A. R.C.S.

Applications to the House Governor immediately on forms available from 339, Goldhawk-road, London, W.6.

QUEEN ELIZABETH HOSPITAL FOR CHILDREN, Hackney-road, E.2; Shadwell, E.1; and BANSTEAD, SURREY. HOUSE OFFICER appointment for 2 consecutive periods of 6 months, commencing 1st September, 1958; first period House Physician, Shadwell; second period House Surgeon, Banstead (3 months), and Casualty Officer, Hackney-road (3 months).

Application forms may be obtained from the Secretary at Hackney-road, and should be returned, with not more than 3 testimonials, not later than 12th July, 1958.

QUEEN MARY'S (ROEHAMPTON) HOSPITAL, Roehampton-lane, London, S.W.15. (326 Beds.) JUNIOR HOSPITAL MEDICAL OFFICER required for Tropical Diseases Unit. Suitable post for prospective M.R.C.P. candidate. National Health Service terms and conditions.

Apply, Medical Superintendent.

REGIONAL NEUROSURGICAL CENTRE. (66 Beds.) BROOK GENERAL HOSPITAL, Shooters Hill-road, S.E.18. SENIOR HOUSE OFFICER (neurosurgery). Post recognised for F.R.C.S. and D.P.M. and provides excellent opportunity for training in neurology.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ROYAL MARSDEN HOSPITAL, Fulham-road, S.W.3. Applications are invited from registered medical practitioners for the post of HOUSE SURGEON (resident). Salary £577 10s. p.a. Post is tenable for 6 months.

Forms of application are obtainable from the House Governor, to whom applications, together with copies of 3 recent testimonials, should be sent.

ROYAL COLLEGE OF SURGEONS and ST. JAMES' HOSPITAL, Balham, S.W.12. Applications are invited for a 2-year appointment of REGISTRAR in Pathology, commencing 1st October, who will work the first year at St. James' Hospital (resident or non-resident) and the second year in the Department of Pathology at the Royal College of Surgeons of England.

Further particulars and application forms, which must be completed and returned by 21st July, from Group Secretary, St. James' Hospital, Balham, S.W.12.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications are invited for the post of RESIDENT SENIOR HOUSE OFFICER to the Radiotherapy Department. Applicants should be registered medical practitioners, and the appointment is suitable for a candidate doing a postgraduate course in radiotherapy. The appointment is for 1 year in the first instance. Duties to commence 1st October, 1958.

Application forms may be obtained from the Secretary to the Board of Governors, Royal Free Hospital, Gray's Inn-road, W.C.1, to whom they should be returned not later than 25th July, 1958.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications are invited for the post of Part-time REGISTRAR (4 sessions) in the Dermatological Department, to commence on 1st October, 1958, which will be tenable for 1 year in the first instance. The post is at present held by a Locum Tenens who will be an applicant for the appointment.

Application forms may be obtained from the Secretary to the Board of Governors, to whom they should be returned not later than 25th July, 1958.

ROYAL FREE HOSPITAL, Gray's Inn-road, London, W.C.1. Applications are invited from registered medical practitioners for 2 whole-time, non-resident posts of REGISTRAR in Clinical Pathology. Both appointments for 1 year in the first instance from 1st October, 1958. Experience in clinical pathology essential.

Application forms, which may be obtained from the Secretary to the Board of Governors at the above address, should be returned not later than 26th July, 1958.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as Whole-time REGISTRAR in Anæsthetics to fill a vacancy in the approved trainee establishment at the Woolwich Group of hospitals. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, 11, Portland-place, London, W.1, not later than 19th July, 1958.

SOUTH LONDON HOSPITAL FOR WOMEN AND CHILDREN, Clapham Common, S.W.4. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited from registered Women medical practitioners for the post of ANÆSTHETIC REGISTRAR (either resident or prepared to live within 20 minutes of the Hospital). D.A. desirable but not essential. Post recognised for D.A. and F.F.A. R.C.S. The appointment is normally for 2 years but subject to review at the end of 1 year. Vacant now. Canvassing will disqualify, but candidates may visit the Hospital by arrangement.

Forms of application from the Group Secretary, Lambeth Group Hospital Management Committee, Renfrew-road, S.E.11, to be returned by 26th July.

ST. MARY'S HOSPITAL, Children's Department, Princess LOUISE KENSINGTON HOSPITAL FOR CHILDREN, St. Quintin-avenue, W.10. 2 HOUSE OFFICERS (pædiatric) required. Vacant 1st September, 1958. Recognised for the D.C.H. Pre-registration (second post) candidates considered. Appointments will be preceded by 2 weeks' locum duties.

Applications, with 2 names for reference, to be submitted to the Secretary by 14th July, 1958.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Upper-road, Plaistow, London, E.13. HOUSE SURGEON (pre-registration, first or second post) to commence on 17th July, 1958. Duties include general surgery, gynæcology and E.N.T.

Apply to Hospital Secretary immediately.

ST. MARY'S HOSPITAL, Paddington, W.2. Registrar in General Medicine (whole-time, non-resident) for first period of 12 months from 1st September, 1958, to undertake work in Casualty and Outpatient Departments, together with certain inpatient duties.

Applications, giving full details with names and addresses of 3 referees, should reach the House Governor not later than 15th July, 1958.

ST. NICHOLAS HOSPITAL, Plumstead, S.E.18. Senior HOUSE OFFICER (Casualty, Orthopædic and Fracture Departments). Vacant early August. Recognised for F.R.C.S. 6 months' resident appointment and may then be renewed. Salary £819 10s. p.a. less £150 p.a. for residence.

Apply to Group Secretary, Memorial Hospital, Woolwich, S.E.18.

ST. PETER'S, ST. PAUL'S AND ST. PHILIP'S HOSPITALS. RESIDENT SURGICAL OFFICER (Senior Registrar grade) required for St. Peter's Hospital on 1st October, 1958. Applications invited from Male candidates on the British Register who have completed their training in general surgery. Appointment for 6 months, with opportunity for a further 6 months if recommended. Candidate should be prepared to spend 1 year at the Hospital if required.

Applications (12 copies) and the names of 3 referees, should reach the House Governor, St. Peter's Hospital, Henrietta-street, W.C.2, by 19th July, 1958.

WANSTEAD HOSPITAL, Hermon Hill, London, E.11. (191 Beds.) HOUSE SURGEON required. Post vacant 28th July, 1958. Recognised for F.R.C.S.

Applications, with full details and copies of 2 recent testimonials, should be sent immediately to Secretary, Forest Group Hospital Management Committee, Langthorne-road, E.11.

WANDSWORTH HOSPITAL GROUP. South West METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (obstetrics and gynæcology) required for Group Maternity Unit. Post vacant mid-August. Recognised for M.R.C.O.G. Duties at St. James' Hospital and Weir Maternity Hospital.

Application forms, obtainable from Group Secretary, St. James' Hospital, Balham, S.W.12, to be completed and returned by 19th July.

WEST LONDON HOSPITAL, Hammersmith-road, W.6. 2 RESIDENT HOUSE SURGEONS required 1st August, 1 general and orthopædic, the other general and genitourinary. Pre-registration candidates considered.

Detailed applications, copies 2 recent testimonials, to Secretary, by 14th July.

WHIPPS CROSS HOSPITAL, London, E.11. Leytonstone (No. 10) HOSPITAL GROUP. Applications are invited for the post of SENIOR HOUSE OFFICER (pathology) at the Area Laboratory at above Hospital. The post is normally a resident one, but applications will be considered from persons wishing to be non-resident, providing that they will reside near the Hospital and be on call.

Application forms obtainable from the Hospital Secretary, to be returned by 15th July, 1958.

ABERDEEN GENERAL HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the post of REGISTRAR in General Medicine at the Aberdeen Royal Infirmary, with duties in other hospitals. The post is a whole-time one, and the salary and conditions of service are in accordance with the terms issued by the Department of Health for Scotland.

Applications, giving details of qualifications and experience, with the names of 2 referees, should be lodged with the Group Secretary and Treasurer, Aberdeen General Hospitals, P.O. Box No. 92, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ABERDEEN GENERAL HOSPITALS BOARD OF MAN-AGEMENT. Applications are invited for an appointment as SENIOR HOUSE OFFICER in the Orthopædic Department of the Aberdeen Royal Infirmary. The post, which is a whole-time one and non-resident, becomes vacant on 31st July. Salary and conditions of service in accordance with the terms issued by the Department of Health for Scotland.

Applications, giving details of qualifications and experience with the names of 2 referees, should be lodged with the Group Secretary and Treasurer, Aberdeen General Hospitals, P.O. Box 92, 62, Queen's-road, Aberdeen, within 14 days of the appearance of this advertisement.

ABERYSTWYTH, CARDIGANSHIRE. GENERAL HOS-PITAL. MID-WALES HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (surgical) required (resident). Post recognised for F.R.C.S. examination. Vacancy immediate.

Applications, stating age, experience, &c., to the Group Secretary, Mid-Wales Hospital Management Committee, 31, North-parade, Aberystwyth, Cardiganshire.

AMERSHAM GENERAL HOSPITAL, Buckinghamshire. (297 Beds.) RESIDENT SENIOR HOUSE OFFICER required for Orthopædic and Casualty Department for period of 1 year. Post recognised for F.R.C.S. The department forms part of the Regional Accident and Orthopædic Service based on the Nuffield Orthopædic Centre, Oxford.

Applications, with names and addresses of 3 referees, to Hospital Secretary.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT SENIOR HOUSE OFFICER in Pathology. Previous clinical experience essential but pathological experience not essential.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital, immediately.

ASHFORD HOSPITAL, Ashford, Middlesex. (560 Beds.) STAINES GROUP HOSPITAL MANAGEMENT COMMITTEE. Required, RESIDENT HOUSE SURGEON for Traumatic and Orthopædic Unit. 6-month appointment, suitable for pre-registration candidates.

Applications, stating age, qualifications and experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately.

AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCK-INGHAMSHIRE AND ASSOCIATED HOSPITALS MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics) for the Aylesbury Group of hospitals. Recognised for D.A. and F.F.A. R.C.S.

Applications, giving full details of experience, and 2 names for reference, to the Secretary to the Management Committee, 9, Bicester-road, Aylesbury.

AYLESBURY, BUCKINGHAMSHIRE. ROYAL BUCK-INGHAMSHIRE HOSPITAL. Accident and orthopædic and children's general surgery. HOUSE OFFICER required 1st August. Recognised for F.R.C.S. Pre-registration post, but registered practitioners are invited to apply.

Apply, with 2 names for reference, to Secretary-Superintendent.

AYLESBURY, BUCKINGHAMSHIRE. STOKE MANDE-VILLE HOSPITAL. (619 Beds.) HOUSE PHYSICIAN for Pædiatric Department (18 medical beds). The post qualifies for D.C.H. Additional duties in Infectious Diseases Unit, Plastic Unit and Outpatients Department, Royal Buckinghamshire Hospital. Applications from registered practitioners and pre-registration candidates considered. Post vacant 2nd August. Interviews 24th July.

Applications, with copies of 2 testimonials, to the Administrative Officer, by 14th July.

BEBINGTON, WIRRAL, CHESHIRE. CLATTER-BRIDGE HOSPITAL. CENTRAL WIRRAL GROUP. Locum SENIOR HOUSE OFFICER (anæsthetics) required to fill vacancy until 30th September, 1958. Salary in accordance with current terms and conditions of service.

Application forms, obtainable from Secretary, to be returned within 7 days of the appearance of this advertisement.

ALTON GENERAL HOSPITAL, Alton. (136 Beds.) SENIOR HOUSE OFFICER (medical) immediate vacancy. Resident candidate should have some experience of anæsthetics.

Applications, stating age, qualifications and experience together with 2 copies of testimonials, to Hospital Secretary.

BARNSTAPLE, NORTH DEVON INFIRMARY. (105 Beds.) HOUSE SURGEON (pre-registration) required from mid-July.

Applications, naming 2 referees, to Group Secretary, 19, Alexandra-road, Barnstaple, N. Devon.

BARRY ACCIDENT AND SURGICAL HOSPITAL. SENIOR HOUSE OFFICER required. House available to rent.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

BECKENHAM HOSPITAL, Kent. (100 Beds.) House SURGEON required at above Hospital immediately. Recognised for F.R.C.S. Pre-registration post, with continuity for further 6 months in House Physician post, subject to satisfactory service.

Apply, stating age, qualifications and experience, and naming 3 referees, to Administrative Officer.

BEDFORD GENERAL HOSPITAL. (431 Beds.) House SURGEON required. Pre- or post-registration; recognised for F.R.C.S. Vacant early July. Post offers exceptional opportunities for general experience in busy acute surgical units.

Enquiries and applications, with copies of 2 recent testimonials, to be sent immediately to Group Secretary, Bedford Group Hospital Management Committee, 3, Kimbolton-road, Bedford.

BEVERLEY, YORKSHIRE. WESTWOOD HOSPITAL. (229 Beds.) HOUSE SURGEON (House Officer or Senior House Officer grade according to experience). Vacant now. General surgical duties, some orthopædics. Offers good opportunity for general experience in busy acute general hospital. Recognised for F.R.C.S. Approved pre-registration post but fully registered practitioners may apply.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

BIRMINGHAM, 18. ALL SAINTS' HOSPITAL. Senior HOUSE OFFICER (resident) required (Male or Female). The Hospital is associated with Birmingham University for teaching of psychiatry. Training for Diploma in Psychological Medicine provided.

Applications, stating age and qualifications, to the Medical Superintendent.

BIRMINGHAM, 18. DUDLEY ROAD HOSPITAL. Senior HOUSE OFFICER in Anæsthetics (resident). Vacant 1st August, 1958. Recognised for D.A. and F.F.A. R.C.S. Extensive experience not necessary. Duties include list and emergency work in general surgery, gynæcology, obstetrics and E.N.T. at hospitals within the Group.

Detailed applications, with names of 2 referees, to Group Secretary.

BIRMINGHAM REGIONAL HOSPITAL BOARD.

(1) **Birmingham (Dudley Road) Group, Dudley Road Hospital, Birmingham, 18**

REGISTRAR (general medicine), whole-time. Dudley Road Hospital, Birmingham, 18. Resident or non-resident. Now vacant.

(2) **Shrewsbury Group, Royal Salop Infirmary, Shrewsbury**

(*a*) REGISTRAR (psychiatry). Whole-time. Shelton Mental Hospital. Previous experience general medicine desirable.

(*b*) REGISTRAR (E.N.T. surgery). Eye, Ear and Throat Hospital (68 Beds), and Copthorne Hospital, Shrewsbury (168 Beds). Resident non-resident. Considerable experience specialty desirable.

(3) **West Bromwich and District Group, Edward-street, West Bromwich**

(*a*) REGISTRAR (general surgery). Recognised for F.R.C.S. Duties in Casualty Department, West Bromwich and District General Hospital. Opportunity deputise for Resident Surgical Officer in general surgical work. Resident. Experience specialty required.

(*b*) REGISTRAR (general medicine), Hallam Hospital, West Bromwich (General Hospital 430 Beds) (80 acute medical and 53 chronic sick beds—2 House Physicians). Vacant 1st July, 1958. Experience specialty desirable. Resident.

Application forms from Group Secretaries to be returned by 14th July, 1958.

BIRMINGHAM REGIONAL HOSPITAL BOARD and UNITED BIRMINGHAM HOSPITALS. Whole-time SENIOR REGISTRAR in Plastic Surgery. Duties mainly at the Regional Plastic Surgery Centre, Wordsley Hospital, Stourbridge (9 notional half-days), and at the United Birmingham Hospitals (2 notional half-days). Experience specialty and higher qualification essential.

Application forms from Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15, by 21st July, 1958.

BIRMINGHAM REGIONAL HOSPITAL BOARD. Whole-time Locum Tenens SENIOR SURGICAL REGISTRAR, City General Hospital, Stoke-on-Trent. Wide experience specialty required. Salary £26 8s. per week less emoluments.

Apply immediately, giving details of previous experience and naming 2 referees, to Secretary, Regional Hospital Board, 10, Augustus-road, Birmingham, 15.

BIRMINGHAM. THE UNITED BIRMINGHAM HOS-PITALS. The following resident appointments are available for the 6-month period commencing 7th July, 1958. Recognised for pre-registration candidates, but registered medical practitioners may apply.

Queen Elizabeth Hospital

HOUSE SURGEONS to the E.N.T. Department.

HOUSE SURGEONS to the Ophthalmic Department.

General Hospital

HOUSE SURGEON to the E.N.T. Department.

Forms of application may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Edgbaston, Birmingham, 15, and should be returned as soon as possible.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. Applications are invited for the appointment of SURGICAL REGISTRAR (Senior Registrar grade) to the United Birmingham Hospitals. The appointment will be for 1 year in the first instance and subject to annual review. The successful candidate may subsequently be required to spend not more than 2 years in a selected hospital of the Birmingham Regional Hospital Board in accordance with an arrangement for the interchange of Registrars agreed between the 2 Boards. Candidates must be registered medical practitioners and should possess the F.R.C.S. The appointment is non-resident but the successful candidate will be expected to take his turn of overnight reception duties.

Forms of application may be obtained from the Secretary, United Birmingham Hospitals, Queen Elizabeth Hospital, Birmingham, 15, and should be returned not later than 19th July, 1958.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, Birmingham, 16. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant 19th September, 1958. The post is suitable for persons training for paediatrics or contemplating a career in pathology. The holder is expected to attend clinical rounds and meetings and to assist in the investigation of clinical problems.

Forms of application obtainable from the House Governor should be returned to him by 19th July, 1958.

G. A. PHALP, Secretary to the Board of Governors.

BIRMINGHAM. THE UNITED BIRMINGHAM HOSPITALS. THE CHILDREN'S HOSPITAL, Ladywood-road, BIRMINGHAM, 16. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Registrar), vacant 7th September, 1958, for 1 year. Preference will be given to applicants with a higher qualification. Post offers wide practical experience and contact with all specialist departments including thoracic unit.

Forms of application and further details of the post may be obtained from the House Governor and should be returned by 26th July, 1958. G. A. PHALP, Secretary to the Board of Governors.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. Applications invited from registered or pre-registration practitioners for post of HOUSE OFFICER (obstetrics and gynæcology) vacant 1st September, 1958. Recognised for D.Obst. R.C.O.G. Departmental beds 69.

Apply, naming 2 referees, to Group Secretary at above address.

BISHOP AUCKLAND. THE GENERAL HOSPITAL. (350 Beds.) SOUTH WEST DURHAM HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required. Recognised pre-registration appointment. Accommodation available for married officer with no children.

Apply, naming 2 referees, to Group Secretary by 19th July.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Royal Infirmary, Blackburn

HOUSE SURGEON required for 17th August, 1958. Recognised for F.R.C.S. and approved for pre-registration purposes.

Victoria Hospital, Accrington

SENIOR HOUSE OFFICER (medicine) required 22nd July, 1958.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. ROYAL INFIRMARY AND QUEEN'S PARK HOSPITAL, BLACKBURN. SENIOR HOUSE OFFICER for E.N.T. Department (32 Beds); 2 Consultants in specialty. Recognised for D.L.O. and F.R.C.S.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE.

Royal Infirmary, Blackburn

HOUSE SURGEON required for 28th July, 1958. Post recognised for F.R.C.S. and approved for pre-registration purposes.

Queen's Park Hospital, Blackburn

HOUSE SURGEON required 23rd July, 1958. Recognised for F.R.C.S. and approved for pre-registration purposes.

Apply to Group Secretary, Hospital Management Committee Office, Royal Infirmary, Blackburn.

BLACKBURN (near). CALDERSTONES HOSPITAL, WHALLEY, near BLACKBURN, LANCASHIRE. (For mental defectives—2300 Beds.) CALDERSTONES HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER. Salary scale £852 10s.–£55–£1182 10s. Health Service conditions of service and superannuation scheme. Residential quarters available for single man.

Applications, stating age, qualifications and experience, together with the names and addresses of 3 referees, to be submitted to the Medical Superintendent, Calderstones Hospital, Whalley, near Blackburn, as soon as possible.

BRADFORD. ST. LUKE'S HOSPITAL. Locum Senior HOUSE OFFICER (general medicine and pathology). From 14th July to 24th August, inclusive.

Applications, stating age, nationality, qualifications and experience with copy testimonials, to Secretary, Royal Infirmary, Bradford.

BOURNEMOUTH. ROYAL VICTORIA HOSPITAL, Shelley-road, BOSCOMBE. (494 Beds.) BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of RESIDENT REGISTRAR in Anæsthetics at the above Hospital. The post, which becomes vacant on 1st September, 1958, is tenable for 1 year in the first instance. Applicants should have had considerable experience in anæsthesia.

Forms of application obtainable from the Group Secretary, Hospital Management Committee Office, Royal Victoria Hospital, Shelley-road, Boscombe, should be returned to him duly completed not later than 19th July, 1958.

BOURNEMOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. BOURNEMOUTH CHILDREN'S UNIT. Applications are invited for the appointment of PÆDIATRIC SENIOR HOUSE OFFICER to the above Unit of 34 Beds which is situated at the Christchurch Hospital, Hants. Duties include the conduct of an Infant Welfare Centre. The post is recognised for the D.C.H. and becomes vacant on 10th September, 1958.

Applications, with copies of testimonials, to the Hospital Secretary, Christchurch Hospital, Hants, within 7 days of the appearance of this advertisement.

BRIGHTON AND LEWES HOSPITAL MANAGEMENT COMMITTEE. Locum ANÆSTHETIC REGISTRARS required for 2 periods from 31st July to 20th August and from 1st to 28th September, 1958.

Applications, giving details of experience, with the names of 2 referees, to the Group Secretary, Brighton and Lewes Hospital Management Committee, Royal Sussex County Hospital, Eastern-road, Brighton, 7.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON (recognised for F.R.C.S.) to the General Surgical Unit (60 Beds). The post will be vacant on 1st August, 1958. Salary in accordance with national scale. Recognised as a pre-registration appointment.

Applications, stating age, qualifications, experience and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of SENIOR HOUSE OFFICER (orthopædics). Recognised for F.R.C.S. examinations. Salary in accordance with national scale. Vacant 9th August, 1958.

Applications, stating age, qualifications, and experience, together with copies of recent testimonials, and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton, 7, as soon as possible.

BRIGHTON GENERAL HOSPITAL. Applications are invited for the appointment of HOUSE SURGEON to the Orthopædic Unit. Salary in accordance with national scales. This is a pre-registration appointment. Vacant early in July.

Applications, stating age, qualifications, and experience, and giving the names of 2 referees, should be sent to the Physician-Superintendent, Brighton General Hospital, Elm-grove, Brighton.

BRIGHTON. ROYAL SUSSEX COUNTY HOSPITAL. (314 Beds.) HOUSE SURGEON (including gynæcology) required 1st August, 1958. Pre-registration and recognised for F.R.C.S.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRIGHTON. SUSSEX EYE HOSPITAL. (56 Beds.) SENIOR HOUSE SURGEON (Senior House Officer grade) and HOUSE SURGEON required end of August. Both posts recognised for F.R.C.S. and D.O. Successful applicant for the post of House Surgeon will be considered for the senior post on completion of 6 months.

Applications, stating usual particulars, and naming 2 referees, to the Administrative Officer, Royal Sussex County Hospital, Brighton, 7.

BRISTOL. COSSHAM MEMORIAL HOSPITAL. (88 Beds, acute medicine and surgery, and Casualty Department.) Vacancy for SENIOR HOUSE OFFICER in General Surgery. Unmarried accommodation only. Tenable initially for 1 year, renewable by mutual agreement.

Applications, stating age and experience, and naming 2 referees, to the Hospital Secretary, Cossham Memorial Hospital, Kingswood, Bristol, by 11th July, 1958.

BURNLEY GENERAL HOSPITAL. (641 Beds.) Senior HOUSE OFFICER (medical). The post offers good all-round experience under Consultant Staff. Good accommodation available for single or married applicant. Post available mid-August.

Applications, with 2 references, to Group Secretary, Burnley and District Hospital Management Committee, Burnley General Hospital.

BURNLEY GENERAL HOSPITAL. (641 Beds.) Resident HOUSE OFFICER (gynæcology). The appointment is recognised as a pre-registration post and also recognised for M.R.C.O.G. Subject to satisfactory service, the successful applicant will be favourably considered for an obstetric appointment. Position vacant August.

Applications, with 2 references, to Group Secretary, Burnley and District Hospital Management Committee, Burnley General Hospital, Burnley.

BURNLEY AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (pædiatrics). This post provides wide and varied experience in all branches of pædiatrics and there is a new Pædiatric Unit at the main Hospital. Post recognised for D.C.H. Good accommodation available.

Applications, with 2 references, to Group Secretary, Burnley General Hospital.

BURNLEY AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. BURNLEY GENERAL HOSPITAL (641 Beds). BURNLEY VICTORIA HOSPITAL (171 Beds). RESIDENT HOUSE OFFICERS (medical). The appointments are approved as pre-registration posts. Vacant July.

Applications, with 2 references, to Group Secretary, Burnley General Hospital.

BURNLEY AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. BURNLEY GENERAL HOSPITAL (641 Beds). BURNLEY VICTORIA HOSPITAL (171 Beds). RESIDENT HOUSE OFFICERS (surgical). The appointments are approved as pre-registration posts and recognised for F.R.C.S. Subject to satisfactory service, the successful applicants will be favourably considered for appointment as House Physician at the termination of contract as Surgical House Officer. Positions vacant July.

Applications, with 2 references, to Group Secretary, Burnley General Hospital.

BURNLEY AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER (anæsthetics). The post offers good all-round experience under Consultant staff and is recognised for the Diploma in Anæsthetics. Resident accommodation is available.

Applications, with 2 references, to the Group Secretary, Burnley General Hospital.

BURNLEY AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER to Orthopædic and Casualty Departments. Recognised for F.R.C.S. Resident accommodation available. Post available September.

Applications, with the names of 2 referees, to Group Secretary, Burnley General Hospital.

BURTON-ON-TRENT. THE GENERAL HOSPITAL. HOUSE OFFICER (orthopædics) (pre-registration post) required at the above Hospital. Recognised for F.R.C.S.

Applications to Group Secretary as soon as possible.

CAMBRIDGE, ADDENBROOKE'S HOSPITAL. Registrar in Pædiatrics (non-resident) for 1 year in the first instance, renewable for second year. Duties include pædiatric responsibilities at Cambridge Maternity Hospital.

Apply, with full particulars and names of 3 referees, to Secretary by 16th July.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) The post of SENIOR HOUSE PHYSICIAN becomes vacant at the end of July, 1958. Salary £819 10s. p.a. with National Health Service conditions.

Applications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) The post of OBSTETRIC HOUSE SURGEON, which is recognised for the M.R.C.O.G. and D.Obst.-R.C.O.G. becomes vacant towards the end of July, 1958. National Health Service salary and conditions.

Applications, together with 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CANTERBURY. KENT AND CANTERBURY HOSPITAL. (277 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER (pathology), which becomes vacant mid-July, 1958, for 1 year. Salary £819 10s. p.a., with National Health Service conditions. Experience in pathology not essential but candidates must have had previous clinical experience.

Applications, stating age, qualifications, together with copies of 2 recent testimonials, to be addressed to the Hospital Secretary at the above Hospital.

CARDIFF. ST. DAVID'S HOSPITAL. Resident OBSTETRICAL HOUSE OFFICER (recognised for M.R.C.O.G.) required in a Maternity Department at above Hospital. Commencing 1st August, 1958.

Form of application from Group Secretary, Cardiff Hospital Management Committee, 44, Cathedral-road, Cardiff.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (General children's hospital of 550 Beds.) HOUSE PHYSICIAN (Senior House Officer) required, care of acute medical, rheumatism and poliomyelitis beds.

Applications, stating age, qualifications and experience, together with copies of 3 testimonials, should reach the Group Secretary by 19th July, 1958.

CARSHALTON, SURREY. QUEEN MARY'S HOSPITAL FOR CHILDREN. (A general children's hospital of 550 Beds.) SURGICAL AND ORTHOPÆDIC REGISTRAR required for duties which include shared Registrar responsibility for 120 orthopædic beds and 60 acute and general beds. Applicants are invited to visit the hospital by appointment with the Physician-Superintendent.

Applications, which should be made on forms obtainable from the Group Secretary, should be returned immediately.

CARSHALTON, SURREY. ST. HELIER HOSPITAL. SENIOR HOUSE OFFICER (Chest Unit). Medical and surgical duties. Post vacant now.

Applications, stating age, qualifications and experience, with copies of testimonials and the names of 2 referees, should be sent to the Group Secretary at above address.

CHELTENHAM GENERAL HOSPITAL. (220 Beds.) HOUSE SURGEON required (pre- or post-registration). The post offers a wide experience in general surgery, gynæcology, and orthopædic surgery. Post recognised for the F.R.C.S.

Apply, with names of 2 referees, to the Secretary, General Hospital, Cheltenham.

CHELTENHAM MATERNITY HOSPITAL. Cheltenham GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of JUNIOR HOSPITAL MEDICAL OFFICER. The Hospital which is recognised for the purpose of training for the D.Obst. R.C.O.G. has 50 Beds and deals with the majority of abnormal midwifery cases in North Gloucestershire. The appointment is for a period of 12 months and will be vacant immediately.

Applications giving age, qualifications, experience, and names and addresses of 3 referees should be sent to the Secretary, Cheltenham Group Hospital Management Committee, General Hospital, Cheltenham.

CHICHESTER. ROYAL WEST SUSSEX HOSPITAL. CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. RESIDENT MEDICAL REGISTRAR required for duty primarily at this Hospital (202 Beds) with care, under Consultant Physicians, of 60 adult medical and 10 children's beds; also assisting Dermatologist. Whitley Council terms and National Health Service superannuation. Salary £935 first year, £1061 10s. second year, less £170 for residence. Candidates may visit Hospital

Forms, from Group Secretary, 174, Broyle-road, Chichester, to be submitted within 14 days.

COVENTRY. GULSON HOSPITAL. House Officer in General Surgery (pre-registration). Recognised F.R.C.S. Resident. Vacant July.

Applications to Group Secretary, Coventry and Warwickshire Hospital, Coventry.

CHESTERFIELD ROYAL HOSPITAL. House Surgeon required mid-July at above Hospital. Post recognised for pre-registration and F.R.C.S. purposes, and if desired medical post can be offered after 6 months.

Please apply to Group Secretary, Chesterfield Hospital Management Committee, with names of 2 referees.

COLCHESTER, ESSEX. SEVERALLS HOSPITAL. SENIOR HOUSE OFFICER required at the above Mental Hospital. There are excellent opportunities for up-to-date experience and postgraduate work in all branches of psychiatry, including treatment of neurosis. Opportunities will be given at the Hospital for clinical instruction for the D.P.M.

Applications, with particulars and copies of testimonials, or names of referees, to the Medical Superintendent as soon as possible.

COLCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for:—

Black Notley Hospital, Braintree, Essex (522 Beds)

Post of SENIOR HOUSE OFFICER for Non-Pulmonary Tuberculosis Unit of approximately 120 Beds, particularly for skeletal and renal tuberculosis; also rheumatoid arthritis cases and spastic children. Recognised for F.R.C.S.

Post of HOUSE SURGEON. Pre-registration or third post. Includes duties in general surgical and gynæcological wards. Recognised for F.R.C.S. Tenable for 6 months.

Clacton and District Hospital, Clacton-on-Sea, Essex (58 Beds)

Post of SENIOR HOUSE OFFICER. Duties include medical, surgical, and casualty work. Post tenable for 6 months or 1 year.

Applications, with copies of 3 testimonials, to Group Secretary, 14, Pope's-lane, Colchester, Essex.

DEVIZES, WILTSHIRE. ROUNDWAY HOSPITAL. (For nervous and mental diseases—1312 Beds.) Applications are invited for the appointment of a JUNIOR HOSPITAL MEDICAL OFFICER for duty at the above Mental Hospital. All forms of modern treatment available, including insulin therapy and out-patient clinics at 4 general hospitals. This is a trainee post, the Hospital Management Committee paying expenses in connection with study leave and attendance at courses for the D.P.M. Salary, £852 10s. p.a., rising by £55 to £1182 10s. p.a. Accommodation for a single man for which £170 p.a. will be charged.

Applications, giving names and addresses of 2 referees, to the Physician-Superintendent as soon as possible.

DEWSBURY, YORKSHIRE. THE GENERAL HOSPITAL. (128 Beds.) Applications are invited for the pre-registration post of HOUSE PHYSICIAN (general medicine and pædiatrics) which falls vacant on 1st August, 1958.

Applications, giving full details, should be sent to the Administrative Officer at the Hospital.

DEWSBURY, YORKSHIRE. STAINCLIFFE GENERAL HOSPITAL. (304 Beds.) Applications are invited for the post of HOUSE PHYSICIAN (general medicine and dermatology) which falls vacant on 1st August, 1958. Recognised pre-registration post and tenable for 6 months. The Hospital has an Acute Medical Unit of 74 Beds.

Applications, giving full details, should be sent to the Administrative Officer at the Hospital.

DEWSBURY, YORKSHIRE. STAINCLIFFE GENERAL HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN (general medicine and pædiatrics) which falls vacant on 1st August, 1958. Recognised pre-registration post and tenable for 6 months. This post is recognised for the Diploma in Child Health. The Hospital has an Acute Medical Unit of 74 Beds.

Applications, giving full details, should be sent to the Administrative Officer at the Hospital.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) JUNIOR HOUSE PHYSICIAN, vacant now. Approved pre-registration post, but fully registered practitioners may apply. Duties to include geriatrics and acute medicine. Good general experience for first house appointment.

Apply Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DRIFFIELD, YORKSHIRE. EAST RIDING GENERAL HOSPITAL. (247 Beds.) HOUSE SURGEON (first, second or third post). Vacant early July. General surgery, casualty and some orthopædics. Approved pre-registration post. Fully registered practitioners may apply.

Applications to Group Secretary, Westwood Hospital, Beverley, Yorkshire.

DUDLEY, STOURBRIDGE AND DISTRICT HOSPITAL GROUP, BIRMINGHAM REGION.

The Corbett Hospital, Stourbridge (114 Beds)

HOUSE OFFICER (surgical), pre-registration. Post vacant now.

Applications, naming 2 referees, to Group Secretary, Guest Hospital, Dudley, Worcs.

HOUSE OFFICER (medical), pre-registration. Post vacant July, 1958.

Apply Group Secretary, Guest Hospital, Dudley, Worcs.

Wordsley Hospital, near Stourbridge (478 Beds)

SENIOR HOUSE OFFICER (medical). Post vacant end of June, 1958.

HOUSE OFFICER (medical), pre-registration. Post vacant July, 1958.

Apply, Group Secretary, Guest Hospital, Dudley, Worcs.

The Guest Hospital, Dudley (154 Beds)

SENIOR HOUSE OFFICER (anæsthetics). Post recognised for D.A. Successful candidate will be required to visit other hospitals in the Group.

Applications, giving the names of 2 referees, to the Group Secretary, Guest Hospital, Dudley, Worcs.

SENIOR HOUSE OFFICER (surgical). Post vacant July, 1958.

HOUSE OFFICER (surgical), pre-registration. Post vacant July, 1958.

HOUSE OFFICER (medical), pre-registration. Post vacant July, 1958.

Apply Group Secretary, Guest Hospital, Dudley, Worcs.

DUNDEE ROYAL MENTAL HOSPITAL (Gowrie House). Applications are invited for the post of HOUSE OFFICER from 1st August, 1958. The post is recognised for pre-registration, and there are facilities for postgraduate study organised in association with the University of St. Andrews.

Applications, with the names of 2 referees, to the Physician-Superintendent, Gowrie House, Liff, By Dundee.

DURHAM. COUNTY HOSPITAL. (116 Beds.) Resident HOUSE SURGEON required in Orthopædics and Casualty. Post recognised for pre-registration purposes. This post offers facilities for good and varied experience in a busy orthopædic and accident hospital which serves a wide mining and industrial area.

Apply, giving age, experience and names of 2 referees, to the Group Secretary, Dryburn Hospital, Durham.

DURHAM. COUNTY HOSPITAL. (116 Beds.) Resident SENIOR HOUSE OFFICER, in Orthopædics. The County Hospital is the main Orthopædic and Accident Hospital in a busy mining and industrial area. Experience can be obtained in all branches of orthopædics.

Applications, with particulars of previous experience and names of 2 referees, to Group Secretary, Dryburn Hospital, Durham.

EAST ANGLIAN REGIONAL HOSPITAL BOARD.

(1) ORTHOPÆDIC REGISTRAR, Norfolk and Norwich Hospital (441 Beds). Post provides excellent training. Appointment for 1 year, renewable for second year. Candidates invited to visit Hospital by direct arrangement with Hospital Management Committee Secretary at the Hospital.

(2) RADIOLOGICAL REGISTRAR, Papworth and Addenbrooke's Hospitals, Cambridge. Joint appointment by Regional Hospital Board and Board of Governors of United Cambridge Hospitals. Major portion of duties at Papworth Hospital—regional centre for thoracic—including cardiac—surgery. Appointment for 1 year, renewable for second year. Candidates invited to visit hospitals by direct arrangement with the Physician-Superintendent, Papworth Hospital.

Applications, stating age, experience and the names of 3 referees, to the Board's Senior Administrative Medical Officer, 117, Chesterton-road, Cambridge, by 21st July, 1958.

EAST GRINSTEAD, SUSSEX. QUEEN VICTORIA HOSPITAL. (PLASTIC SURGERY AND JAW INJURIES UNIT.) TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. RESIDENT HOUSE OFFICER required. Appointment vacant 1st August, 1958, for 6 months, offering considerable opportunity to gain experience in plastic surgery and jaw injuries work.

Apply, stating age, and names of 3 referees, to Hospital Secretary.

EBBW VALE GENERAL HOSPITAL. (General beds 71, maternity 15.) Applications are invited for the vacancy of JUNIOR HOSPITAL MEDICAL OFFICER. Staff comprises Resident Consultant Surgeon, visiting Orthopædic, Gynæcological and Ophthalmic Surgeons, and Resident House Officer. Appointment shall be for a period not exceeding 4 years.

Apply, with full details and references, to Group Secretary, North Monmouthshire Hospital Management Committee, Nevill Hall Hospital, Abergavenny, Mon.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. (715 Beds.) RESIDENT HOUSE PHYSICIAN for Thoracic and Dermatological Departments. Duties to include taking of acute general medical cases. 6 months' appointment. Post vacant 28th July, 1958.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Hospital by 12th July, 1958.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT OBSTETRIC HOUSE SURGEON for above Hospital. Post vacant 21st August, 1958, and recognised for M.R.C.O.G. purposes. 6 months' appointment.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Hospital by 18th July, 1958.

EDGWARE GENERAL HOSPITAL, Edgware, Middlesex. RESIDENT GYNÆCOLOGICAL HOUSE SURGEON for above Hospital. Post vacant 14th August, 1958, and recognised for M.R.C.O.G. purposes. 6 months' appointment.

Applications, stating age, qualifications, experience and enclosing copies of up to 3 recent testimonials, to Medical Administrator of Hospital by 18th July, 1958.

ENFIELD. WAR MEMORIAL HOSPITAL, Chase Side, ENFIELD, MIDDLESEX. RESIDENT SENIOR HOUSE OFFICER required immediately for general medical and surgical duties in acute general hospital of 61 Beds. 12-month appointment.

Applications, with names and addresses of 2 referees, to the Group Secretary, Enfield Group Hospital Management Committee, Chase Farm Hospital, The Ridgeway, Enfield, Middlesex.

EPPING. ST. MARGARET'S HOSPITAL. Resident SENIOR HOUSE OFFICER (surgery). Post vacant 11th August. Recognised for F.R.C.S. Busy general hospital with easy access to London.

Applications, with copies of 2 testimonials, to reach the Group Secretary, Epping Group Hospital Management Committee, Oak Cottage, The Plain, Epping, Essex, by 11th July, 1958.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 12th August for general surgery. Pre-registration post recognised for F.R.C.S.

Applications, stating age, qualifications and experience with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EPSOM DISTRICT HOSPITAL, Dorking-road, Epsom, SURREY. RESIDENT HOUSE SURGEON required 28th July for Orthopædic, E.N.T. and Eye Departments. Pre-registration post recognised for F.R.C.S.

Applications, stating age, qualifications and experience, with copies of 2 recent testimonials, should be sent as soon as possible to Group Secretary at above address.

EDINBURGH NORTHERN GROUP OF HOSPITALS. RESIDENT HOUSE OFFICER required for Maternity Unit, Eastern General Hospital, for 6 months, commencing 1st July, 1958. This post is recognised for the M.R.C.O.G.

Applications, with names of 2 referees, to the Medical Superintendent, Western General Hospital, Crewe-road, Edinburgh, 4.

EDINBURGH. THE ROYAL EDINBURGH HOSPITAL FOR MENTAL AND NERVOUS DISORDERS. Applications are invited for the appointment of SENIOR HOUSE OFFICER to work in the Professorial Unit of the Jordanburn Nerve Hospital, which is attached to the University Department of Psychological Medicine. The post also includes outpatient and inpatient work at the Royal Infirmary of Edinburgh. The appointment becomes vacant on 1st October, 1958. Accommodation may be available.

Applications, giving details of experience and the names of 2 referees, should be made within 2 weeks of the appearance of this advertisement to the Group Secretary and Treasurer, Royal Edinburgh Hospital for Mental and Nervous Disorders, 40, Colinton-road, Edinburgh, 10.

GLASGOW. BELVIDERE HOSPITAL. (644 Beds.) Applications are invited for the post of RESIDENT HOUSE OFFICER at above Hospital. Vacant 1st August, 1958. 6 months' appointment. Approved pre-registration post in general medicine (first or second). The Hospital is associated with the University Department of Infectious Diseases for undergraduate teaching.

Applications, stating full details and names of 2 referees, to the Physician-Superintendent, Belvidere Hospital, 1410, London-road, Glasgow, E.1.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. Acute Geriatric Unit (70 Beds). Applications are invited for the post of HOUSE OFFICER (recognised for pre-registration) for the 6 months beginning 1st August, 1958, and should be addressed to the Medical Superintendent, giving the names of 2 referees.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. Medical Pædiatric Unit (120 Beds). Applications are invited for the post of HOUSE OFFICER (recognised for pre-registration) for the 6 months beginning 1st August, 1958, and should be addressed to the Medical Superintendent, giving the names of 2 referees.

GLASGOW, N.1. STOBHILL GENERAL HOSPITAL. E.N.T. Unit (70 Beds). Applications are invited for the post of HOUSE OFFICER (recognised for pre-registration) for the 6 months beginning 1st August, 1958, and should be addressed to the Medical Superintendent, giving the names of 2 referees.

GLASGOW. ROYAL HOSPITAL FOR SICK CHILDREN, YORKHILL, GLASGOW, C.3. There are vacancies for HOUSE SURGEONS (pre-registration) for the term 1st August, 1958–31st January, 1959, at the above Hospital.

Applications to be sent to the Medical Superintendent.

GLASGOW ROYAL MENTAL HOSPITAL. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER. Salary £852 10s. p.a.–£55–£1182 10s.

Applications, with the names of 2 referees, to be sent to the Physician-Superintendent, Glasgow Royal Mental Hospital, 1055, Great Western-road, Glasgow, W.2, as soon as possible.

GRANTHAM AND KESTEVEN GENERAL HOSPITAL. (118 Beds.) RESIDENT HOUSE PHYSICIAN (Senior House Officer or Pre-registration Intern). General medical and pædiatric. Post vacant 17th July, 1958.

Applications, with details of experience, &c., and names of 2 referees, to Secretary, 101, Manthorpe-road, Grantham, Lincs.

GRIMSBY GENERAL HOSPITAL. (197 Beds.) Sheffield REGIONAL HOSPITAL BOARD. Whole-time RESIDENT or NON-RESIDENT REGISTRAR (orthopædics) required. The post is recognised to the extent of 6 months for the F.R.C.S., and the Hospital has an excellent reference library. Appointment for 1 year in the first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th July, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

HALIFAX AREA HOSPITALS MANAGEMENT COM-MITTEE. JUNIOR HOSPITAL MEDICAL OFFICER wanted for duties in the wards for chest cases at the Northowram Hall Hospital, Halifax, and the Outpatients' Chest Clinic at the Royal Halifax Infirmary. Approximately 20 non-tuberculous chest patients in hospital and 75 tuberculous. Self-contained flat in good residential accommodation at Hospital. Vacant now.

Applications to be forwarded to the Group Secretary at Royal Halifax Infirmary, Halifax.

HAREFIELD AND NORTHWOOD GROUP HOSPITAL MANAGEMENT COMMITTEE. ORTHOPÆDIC REGISTRAR required for this group of hospitals. Work involves sessions at Harefield, Mount Vernon and Northwood, Pinner and District Hospitals together with 3 sessions at St. Vincent's Orthopædic Hospital.

Application forms obtainable from and returnable to the Group Secretary, Harefield and Northwood Group Hospital Management Committee, Mount Vernon Hospital, Northwood, Middlesex, by 19th July, 1958.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) HOUSE SURGEON. Pre-registration post for general surgery and urology required at this acute hospital (surgical) immediately.

Applications, with names of 2 referees, to Administrator.

HASTINGS. ROYAL EAST SUSSEX HOSPITAL. (150 Beds.) Locum HOUSE SURGEON required. Pre-registration or Senior House Officer, according to experience.

Apply to Hospital Administrator.

HEXHAM GENERAL HOSPITAL. (304 Beds.) Junior HOSPITAL MEDICAL OFFICER (general surgery and orthopædic). Hospital recognised by Royal College of Surgeons. Married accommodation may be available if required.

Applications, with names of 2 referees, as early as possible to Group Secretary, General Hospital, Hexham, Northumberland.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. Locum Tenens CASUALTY OFFICER (Junior Hospital Medical Officer) required for period 9th–31st August inclusive.

Please apply to the Hospital Secretary.

HEMEL HEMPSTEAD, HERTFORDSHIRE. WEST HERTS HOSPITAL. 2 HOUSE SURGEONS (pre-registration) required.

Applications, giving full details and 2 names for reference, should be sent to the Hospital Secretary as soon as possible.

HEREFORD. GENERAL HOSPITAL. (154 Beds.) House OFFICER (medicine) required. Pre-registration post.

Applications, with copies of 2 recent testimonials, to Group Secretary, Hospital Management Committee, Victoria House, Eign-street, Hereford.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for appointment of RESIDENT HOUSE PHYSICIAN (Male or Female), second post held. Recognised pre-registration post. Preference given to applicants who have held resident surgical or medical posts in general hospital. Duties to commence 1st August, 1958.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general surgery, gynæcology and obstetrics) (first or second post). To commence as soon as possible. Pre-registration post; recognised under F.R.C.S. regulations.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HERTFORD COUNTY HOSPITAL. (171 Beds. Hospital situated 21 miles from London.) Applications are invited for the appointment of HOUSE SURGEON (general, first or second post) to commence as soon as possible. Pre-registration post; recognised under F.R.C.S. regulations. Applications will also be considered from fully registered practitioners.

Applications to Group Secretary, Hertford Hospital Management Committee, County Hospital, Hertford, Herts.

HIGH WYCOMBE, BUCKINGHAMSHIRE. WAR MEMORIAL HOSPITAL. (100 Beds.) SENIOR RESIDENT HOUSE PHYSICIAN required. Post vacant 13th July.

Apply immediately, with copies of testimonials or names of 2 referees, to the Secretary.

HIGH WYCOMBE, BUCKINGHAMSHIRE. WAR MEMO-RIAL HOSPITAL. (100 Beds.) Pre-registration HOUSE PHYSICIAN required for 6 months. Post vacant 21st July.

Apply immediately, with names of 2 referees, to Secretary.

HIGH WYCOMBE WAR MEMORIAL HOSPITAL, BUCKINGHAMSHIRE. HOUSE SURGEON required for general surgery and E.N.T.

Apply to Secretary.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. RESIDENT HOUSE SURGEON post now vacant. Recognised as pre-registration post and for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital.

HITCHIN, HERTFORDSHIRE. LISTER HOSPITAL. RESIDENT HOUSE PHYSICIAN now required. Recognised as pre-registration post. Duties include general medicine and paediatrics.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Medical Administrator, Lister Hospital.

HUDDERSFIELD. MILL HILL HOSPITAL. (164 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of RESIDENT MEDICAL OFFICER (Junior Hospital Medical Officer grade, £852 10s.–£55–£1182 10s. p.a.) at above Hospital. The present allocation of beds is 28 for infectious diseases and 136 for geriatric patients.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Group Secretary.
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from provisionally registered medical practitioners for the post of HOUSE PHYSICIAN to commence duties immediately. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Group Secretary,
Huddersfield Hospital Management Committee.
The Royal Infirmary, Huddersfield.

HUDDERSFIELD ROYAL INFIRMARY. (285 Beds.) HUDDERSFIELD HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON required to commence duty on 6th August, 1958. The post is recognised as a pre-registration appointment and for the F.R.C.S. Salary in accordance with national scale.

Applications, together with copies of 3 recent testimonials, to be addressed to the undersigned as soon as possible.

H. J. JOHNSON, Secretary to the Management Committee.
The Royal Infirmary, Huddersfield.

HULL. KINGSTON GENERAL HOSPITAL. (419 Beds.) HULL A GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON (pre-registration post). Resident, and tenable for 6 months. This post includes gynæcology and general surgery.

Applications, with 2 recent testimonials, to the Hospital Secretary.

HUNTINGDON COUNTY HOSPITAL. Applications are invited for the post of HOUSE OFFICER (surgical) now vacant. Post recognised for pre-registration purposes.

Apply, with full particulars and names of 2 referees, to Secretary, County Hospital, Huntingdon.

HORNCHURCH. ST. GEORGE'S HOSPITAL. Junior HOSPITAL MEDICAL OFFICER (resident) required from approximately 1st September next at this Hospital which accommodates 404 chronic sick patients. The post offers excellent geriatric experience.

Applications should be forwarded to the Secretary, Romford Group Hospital Management Committee, Oldchurch Hospital, Romford, as soon as possible.

ILFORD. KING GEORGE HOSPITAL, Eastern-avenue, ILFORD, ESSEX. There will be a vacancy for a HOUSE PHYSICIAN at above Hospital on 6th August, 1958. First or second post; pre-registration. The post will be tenable for 6 months.

Applications, giving full particulars and accompanied by testimonials, should be sent to the undersigned within 7 days of the appearance of this advertisement.

H. F. HARRIS, Group Secretary,
Ilford and Barking Group Hospital Management Committee.
King George Hospital.

IPSWICH AND EAST SUFFOLK HOSPITAL (Anglesea-ROAD WING). (356 Beds.) Applications invited for post of HOUSE SURGEON to Consultant General Surgeon, vacant 28th July, 1958. Post recognised for pre-registration and F.R.C.S. examinations.

Applications, with copies of recent testimonials, to Hospital Secretary.

IPSWICH. ST. HELEN'S HOSPITAL. (129 Beds for infectious diseases, pulmonary tuberculosis, long-stay orthopædics and geriatrics. The area Chest Clinic is in the Hospital.) HOUSE PHYSICIAN required (post-registration appointment). Accommodation available for married man.

Applications to JOHN WILLIAMS, Group Secretary, Ipswich Group Hospital Management Committee, at the Ipswich and East Suffolk Hospital (Anglesea-road Wing), Ipswich.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. North WEST METROPOLITAN REGIONAL HOSPITAL BOARD. REGISTRAR (whole-time) in Obstetrics and Gynæcology. 1 year in first instance. Hospital may be visited by direct appointment. Post vacant 24th August, 1958.

Application forms obtainable from and returnable to Group Secretary, West Middlesex Hospital, Isleworth, by 15th July.

ISLEWORTH. WEST MIDDLESEX HOSPITAL. South WEST MIDDLESEX HOSPITAL MANAGEMENT COMMITTEE. HOUSE SURGEON. Duties include plastic surgery and orthopædic surgery (58 orthopædic beds and 18 plastic surgery beds). Large outpatient clinics. Post vacant 17th August, 1958.

Applications to Group Secretary, West Middlesex Hospital, Isleworth, by 15th July.

KETTERING AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. Applications are invited from registered medical practitioners for the appointment of SENIOR HOUSE OFFICER to the Geriatric Unit in this area. There are 160 active beds in the unit in 3 hospitals. Post vacant 14th August, 1958. Residential accommodation available. National scale of salary.

Applications, together with the names and addresses of 2 referees, to the Group Secretary, Central Administration Offices, General Hospital, Kettering.

KILMARNOCK INFIRMARY. (147 Beds.) House Officer (medical)—2 posts, vacant 1st August. Wide experience under Consultant supervision. Resident. National terms.

Apply immediately Area Medical Superintendent, 1, Hill-street, Kilmarnock (Telephone: Kilmarnock 1300).

LEEDS (near). WOODLANDS ORTHOPÆDIC HOS-PITAL, RAWDON, near LEEDS. (112 Beds.) SENIOR HOUSE OFFICER (resident) required. Post vacant 1st October, 1958.

Applications, stating age and experience, with copies of 2 testimonials, to the Secretary, The Royal Infirmary, Bradford, 9, Yorkshire.

LEEDS REGIONAL HOSPITAL BOARD. Registrar vacancies.

Anæsthetics

(*a*) Duties in Leeds A and B Groups. Recognised for F.F.A. R.C.S. and D.A. Resident or non-resident.

(*b*) York A and Tadcaster Group. Approximately 375 Beds in the surgical specialties. Non-resident.

General Medicine

(*a*) Regional Rheumatism Centre, Harrogate (240 Beds) (9 sessions), and Rheumatic Clinic, General Infirmary, Leeds (2 sessions). Resident at the Royal Bath Hospital, Harrogate.

(*b*) Huddersfield Group (70 general medical beds). Non-resident.

(*c*) Wakefield A Group (74 general medical beds) with additional duties in the Wakefield B Group. Furnished flat available.

Obstetrics and Gynæcology

(*a*) Leeds A Group. Duties to alternate (6-month periods) between St. Mary's Hospital, Leeds (109 obstetric beds), and St. James's Hospital, Leeds (75 obstetric and 52 gynæcological beds). Resident. Recognised for M.R.C.O.G.

(*b*) Halifax General Hospital with additional duties at Halifax Royal Infirmary (108 obstetric and 41 gynæcological beds). Recognised for M.R.C.O.G. Resident.

Orthopædic Surgery

Harrogate General Hospital (38 orthopædic beds). Non-resident.

Otolaryngology

York County and City Hospitals (28 E.N.T. beds). Resident or non-resident.

Psychiatry

(*a*) Menston Hospital, near Ilkley (2500 Beds). Resident.

(*b*) Meanwood Park Hospital (Mental Deficiency), Leeds (800 Beds). Accommodation available for single person.

If desired facilities for attendance at the Leeds University will be provided if the successful candidates are studying for the D.P.M.

Applications, stating age, qualifications and details of present and previous appointments with dates, together with the names and addresses of 3 referees, to the Secretary, Joint Registrars Committee, Park-parade, Harrogate, by 9th July, 1958.

LEEDS REGIONAL HOSPITAL BOARD. Short-term LOCUM TENENS appointments in the Registrar grade are constantly available at hospitals in the area of the Board, particularly in the specialties of anæsthetics, general medicine, general and orthopædic surgery, and psychiatry.

Interested practitioners, suitably experienced, should communicate with the Secretary, Joint Registrars Committee, Park-parade, Harrogate.

LEEDS. THE UNITED LEEDS HOSPITAL. THE GENERAL INFIRMARY AT LEEDS. SENIOR REGISTRAR in General Surgery required, for 1 year in the first instance. Terms and conditions of service for hospital medical staff apply.

Applications, stating age, qualifications, previous posts with dates, and 3 names for reference, should be sent to the Sub-Dean, School of Medicine, Leeds 2.

LINCOLN COUNTY HOSPITAL, Sewell-road, Lincoln. (200 Beds.) Applications are invited from Men and Women for the post of RESIDENT HOUSE PHYSICIAN. This is an approved pre-registration post. The vacancy will occur on 2nd August, 1958.

Applications, with copy testimonials, should be sent to the Group Secretary, Lincoln County Hospital, as soon as possible.

LINCOLN COUNTY HOSPITAL, Sewell-road, Lincoln. (200 Beds.) Applications are invited from Men and Women for 2 posts of RESIDENT HOUSE SURGEON. These are approved pre-registration posts which will be vacant on 1st August, 1958. The duties are with General Surgeons. If satisfactory, candidates will be appointed for a second 6 months as House Physicians.

Applications, with copy testimonials, should be sent to the Group Secretary, Lincoln County Hospital, as soon as possible.

LIVERPOOL, 18. MOSSLEY HILL HOSPITAL. Senior HOUSE OFFICER (surgical) required 1st September, 1958. National Health Service terms and conditions.

Apply, Medical Superintendent.

LLWYNYPIA HOSPITAL, Llwynypia, Rhondda. Pontypridd AND RHONDDA HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER (medicine) required immediately. The person appointed will be required to undertake duties at the Llwynypia Hospital (40 acute medical beds and 78 chronic sick beds), Glyncornel Hospital (56 chronic sick beds), and Tyntyla Isolation Hospital (42 Beds).

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent immediately to the Group Secretary, Pontypridd and Rhondda Hospital Management Committee, Courthouse-street, Pontypridd.

LOUGHBOROUGH GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER, surgical (Female), now vacant.

Applications, stating age, qualifications and experience, with copies of recent testimonials, to Group Secretary, Leicester No. 1 Hospital Management Committee, The Leicester Royal Infirmary.

LOWESTOFT AND NORTH SUFFOLK HOSPITAL, LOWESTOFT, SUFFOLK. SENIOR HOUSE SURGEON (resident) required. Furnished flat available for married officer, if desired. Post recognised for final F.R.C.S. examination requirements. The Hospital has a Consultant General Surgeon and is regularly visited by Consultants in all specialties from the Norfolk and Norwich Hospital. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications and experience, with names and addresses of 2 referees, to Hospital Secretary.

LUTON AND DUNSTABLE HOSPITAL, Luton, Bedfordshire. SENIOR HOUSE OFFICER for Accident Service, including duties in the Hand Infection Unit, required for vacancy mid-July. Post recognised for F.R.C.S.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 recent testimonials, to be sent to the Secretary of the above Hospital as soon as possible.

MAIDSTONE. KENT COUNTY OPHTHALMIC AND AURAL HOSPITAL. (113 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE SURGEON in the Ophthalmic Department of the above Hospital. Post vacant now. The Hospital is recognised by the Examining Board for the F.R.C.S. and the D.O. Salary £819 10s. a year less £150 a year for residential emoluments.

Applications should be forwarded to the Administrative Officer, Kent County Ophthalmic and Aural Hospital, Church-street, Maidstone.

MAIDSTONE. WEST KENT GENERAL HOSPITAL. (141 Beds.) MID-KENT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the pre-registration post of HOUSE SURGEON, 6 months' appointment. Vacant now. Recognised for F.R.C.S. Salary at the rate of £467 10s.–£577 10s. p.a. A deduction at the rate of £125 a year is made for board and lodging, and other services provided.

Applications should be forwarded, as soon as possible, to the Administrative Officer at the Hospital.

MANCHESTER. SOUTH MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (anæsthetics) with duties in the South Manchester Group. This post is recognised by the Royal College of Surgeons for the F.F.A. R.C.S. and for the D.A.

Applications, stating age, present post, experience and the names of 2 referees, to be forwarded immediately to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER. BOOTH HALL CHILDREN'S HOSPITAL, BLACKLEY, MANCHESTER, 9. (380 Beds. Recognised for D.C.H.)

RESIDENT SENIOR HOUSE OFFICER (surgical). Duties orthopædic and E.N.T. Post vacant 1st August.

Applications, giving names and addresses of 2 referees, to be sent to Group Secretary, from whom further particulars may be obtained.

HOUSE OFFICER (surgical), pre- or post-registration. Duties mainly general surgery and neurosurgery. Post vacant.

Applications immediately, with usual particulars and copies of 2 recent testimonials, to Group Secretary.

MANCHESTER. BOOTH HALL CHILDREN'S HOSPITAL, BLACKLEY, MANCHESTER, 9. (380 Beds.) MANCHESTER REGIONAL HOSPITAL BOARD. RESIDENT MEDICAL OFFICER (Registrar grade). Vacant from 1st September, 1958. The Hospital is recognised for D.C.H. and is associated with the University Department of Child Health for undergraduate teaching.

Application forms and further particulars may be obtained from the Secretary, to whom completed forms should be sent before 31st July, 1958.

MANCHESTER. CRUMPSALL HOSPITAL. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade). Now vacant. Tenable for 1 year and presents opportunities for gaining experience in all branches of clinical pathology. Previous experience in pathology not essential.

Applications, with full details and names of 2 referees, by 14th July, 1958, to Group Secretary, North Manchester Hospital Management Committee, Crumpsall Hospital, Manchester, 8.

MANCHESTER (near). PRESTWICH (MENTAL) HOSPITAL. JUNIOR HOSPITAL MEDICAL OFFICER (permanent or temporary) required at above Hospital. Single quarters available. All modern treatments practised and study facilities granted.

Applications, giving full personal details and the names and addresses of 2 referees, should be sent to the Medical Superintendent, Prestwich Hospital, P.O. Box No. 1, Prestwich, Manchester, not later than Saturday, 12th July, 1958.

MANCHESTER REGIONAL HOSPITAL BOARD. North AND MID-CHESHIRE GROUP OF HOSPITALS. ALTRINCHAM GENERAL HOSPITAL AND ANNEXE, near MANCHESTER. (130 Beds. Recognised under F.R.C.S. regulations.) Applications are invited for the post of SURGICAL REGISTRAR, vacant middle of August. This appointment, in a busy general hospital, with duties at other hospitals in the Group, offers excellent opportunities of practical surgical experience to suitably qualified candidates.

Applications, together with 2 recent testimonials, to be sent to the Group Secretary, North and Mid-Cheshire Hospital Management Committee, Sinderland-road, Altrincham, Cheshire.

MANCHESTER REGIONAL HOSPITAL BOARD. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of RESIDENT SURGICAL OFFICER (Registrar grade) at Wythenshawe Hospital. The post will include responsibility for general surgical beds, and is recognised by the Royal College of Surgeons.

Applications, stating age, qualifications, present post, experience and names of 2 referees, to the Group Secretary, Withington Hospital, Manchester, 20.

MANCHESTER, 20. WITHINGTON HOSPITAL. South MANCHESTER HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (surgical), including casualty duties, vacant on 1st September, 1958. The post, which is normally tenable for 12 months, is recognised by the Royal College of Surgeons for the final F.R.C.S. examination, and possession of the primary F.R.C.S. will be an advantage. The Hospital is recognised by the Manchester University for the teaching of undergraduate students.

Applications, with full details, to the Group Secretary, Withington Hospital, as soon as possible.

MANCHESTER. UNITED MANCHESTER HOSPITALS. MANCHESTER ROYAL EYE HOSPITAL. Applications are invited for the post of RESIDENT SURGICAL OFFICER (Registrar grade).

Application forms may be obtained from the undersigned.

H. R. NORTH, General Superintendent,
Manchester Royal Eye Hospital.

MANCHESTER. UNITED MANCHESTER HOSPITALS. SAINT MARY'S HOSPITALS, MANCHESTER. Applications are invited for the post of RESIDENT CLINICAL PATHOLOGIST (Senior House Officer grade), vacant in August. Candidates must have held house-appointments, but previous laboratory experience is not essential. Suitable for candidates interested in obstetrics and/or pædiatrics wishing to obtain laboratory experience. The duties will be mainly in the Department of Clinical Pathology, Saint Mary's Hospitals, but the holder of the post will also spend some time in the Manchester Royal Infirmary.

Applications to be made on forms obtainable from the undersigned and submitted by 14th July, 1958.

A. R. WISE, General Superintendent.

Saint Mary's Hospitals, Whitworth Park, Manchester, 13.

MIDDLESBROUGH. NORTH ORMESBY HOSPITAL. (184 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of HOUSE SURGEON for Surgical Team No. 1 at the above Hospital. The post is recognised for pre-registration service under the Medical Act, 1950.

Applications, stating age, qualifications and experience, and giving names for reference, should be addressed to the Hospital Secretary.

MIDDLESBROUGH. NORTH ORMESBY HOSPITAL. SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER (gynæcology) at the above Hospital which will be vacant about the middle of July. The post is recognised for the R.C.O.G. examinations.

Applications, stating full details and giving names for reference, should be addressed to the Hospital Secretary.

MIDDLESBROUGH GENERAL HOSPITAL, Ayresome Green-lane, MIDDLESBROUGH. (305 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (orthopædics) at the above Hospital. The post is recognised for the F.R.C.S. examination and includes some duties in the Casualty Department, which is under the supervision of a full-time Senior Casualty Officer.

Applications, stating age, qualifications and experience, together with the names of referees, should be sent to the Hospital Secretary.

MIDDLESBROUGH GENERAL HOSPITAL, Ayresome Green-lane, MIDDLESBROUGH. (305 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (surgery) at the above Hospital. The appointment is recognised for the F.R.C.S. examination and will include some duties in the Casualty Department, which is under the supervision of a full-time Senior Casualty Officer.

Applications, stating age, qualifications and experience, together with the names of 2 referees, should be sent to the Hospital Secretary as soon as possible.

MIDDLESBROUGH (near). HEMLINGTON HOSPITAL. SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of SENIOR HOUSE OFFICER (surgery) at the above Hospital. The appointment is recognised for the F.R.C.S. examinations. The Hospital does not have a casualty department.

Applications, stating age, qualifications, and names for reference, to be forwarded to the Hospital Secretary.

MIDDLESBROUGH (near). HEMLINGTON HOSPITAL. (274 Beds.) SOUTH TEES-SIDE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of HOUSE PHYSICIAN at the above Hospital. The post is recognised for pre-registration service under the Medical Act, 1950, and the medical unit consists of 60 Beds. The Hospital is situated in a rural area within easy reach of Middlesbrough.

Applications, stating age, qualifications and experience, together with 2 names for reference, should be addressed to the Hospital Secretary, Hemlington Hospital, Middlesbrough.

MEXBOROUGH. MONTAGU HOSPITAL AND ANNEXE. (198 Beds.) Locum SENIOR HOUSE OFFICER (casualty and orthopædics). £150 p.a. residential emoluments.

Applications to the Secretary to the Committee, Fern Bank, Doncaster-road, Rotherham.

MITCHAM. WILSON HOSPITAL, Cranmer-road, MITCHAM, SURREY. RESIDENT HOUSE PHYSICIAN (non pre-registration). Vacant now.

Applications, stating age, qualifications, &c., with the names and addresses of 2 referees, to the Secretary at above address.

NEWCASTLE GENERAL HOSPITAL. (800 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. SENIOR HOUSE OFFICER, Orthopædic Department. Vacant 7th July, 1958.

Applications, together with names and addresses of 2 referees, should be sent to the Secretary, Newcastle General Hospital, Newcastle upon Tyne, 4.

NEWCASTLE. WALKER GATE HOSPITAL. (309 Beds.) NEWCASTLE UPON TYNE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER to a 90-Bed Unit of this Hospital. The work is mainly pædiatrics and infectious diseases and offers excellent clinical facilities for anyone wishing to gain pædiatric experience.

Applications, together with the names of 3 referees, to be forwarded to the Hospital Secretary, Walker Gate Hospital, Newcastle, 6, immediately.

NEWMARKET GENERAL HOSPITAL, Suffolk. Applications are invited for the post of HOUSE PHYSICIAN now vacant. Duties include house charge of general medical and pulmonary tuberculosis beds. The post is recognised for pre-registration, is resident and tenable for 6 months. Salary in accordance with national scale.

Applications, with 3 recent testimonials, to Medical Superintendent.

NORTHAMPTON (near). CREATON HOSPITAL. Applications are invited from suitably qualified medical practitioners for the post of SENIOR HOUSE OFFICER. The Hospital has 138 Beds, and is for the treatment of both pulmonary and non-pulmonary tuberculosis. There is a major thoracic surgical unit for tuberculosis and non-tuberculous diseases of the chest.

Applications, stating age, experience and qualifications, together with the names and addresses of 2 referees, should be sent to the Secretary, Northampton and District Hospital Management Committee, General Hospital, Northampton, within 7 days of the appearance of this advertisement.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON for general surgery. Recognised for the final F.R.C.S. in general surgery, and recognised as a pre-registration appointment. Vacant 1st August, 1958.

Applications, accompanied by 2 testimonials, to be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, Middlesex, by 16th July, 1958.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE SURGEON to the Gynæcological Department of 25 Beds. This appointment is recognised for the M.R.C.O.G., and may be a pre-registration appointment. Vacant 1st August, 1958.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, Middlesex, by 16th July, 1958.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for 2 posts of HOUSE PHYSICIANS for the Radiotherapy Department. These posts are recognised as pre-registration appointments. Vacant 1st August, 1958.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, Middlesex, by 16th July, 1958.

NORTHWOOD, MIDDLESEX. MOUNT VERNON HOSPITAL. Applications are invited for the post of HOUSE PHYSICIAN for general medicine and dermatology. This is recognised as a pre-registration appointment. Vacant 1st August, 1958.

Applications, accompanied by 2 testimonials, should be forwarded to the Resident Medical Officer, Mount Vernon Hospital, Northwood, Middlesex, by 16th July, 1958.

NORWICH. UNITED NORWICH HOSPITALS. Applications are invited for the following appointments, vacant 1st August, 1958. All are pre-registration posts:—

(1) **Norfolk and Norwich Hospital, Norwich**

HOUSE PHYSICIANS (2). Duties entirely general medical.

HOUSE SURGEONS (2). Post recognised for final F.R.C.S. examination requirements. Duties entirely general surgical.

JUNIOR CASUALTY OFFICER. 2 Casualty Officers employed in the department.

OBSTETRIC HOUSE SURGEON. 2 House Officers employed in the department.

JUNIOR ORTHOPÆDIC HOUSE SURGEON. 2 Orthopædic House Officers employed in the department.

(2) **Jenny Lind Hospital for Children, Norwich**

HOUSE PHYSICIAN at this Hospital, which forms the entire Pædiatric Department of the United Norwich Hospitals. The duties are under the direct supervision of the Consultant Staff of the Norfolk and Norwich Hospital. Post recognised for D.C.H. examination requirements.

HOUSE SURGEON at this Hospital, which forms the entire Pædiatric Department of the United Norwich Hospitals. The duties are under the direct supervision of the Consultant Staff of the Norfolk and Norwich Hospital.

(3) **West Norwich Hospital, Norwich**

HOUSE PHYSICIANS (2). Duties include medical and geriatrics. The beds at this Hospital are under the control of the Consultant Physicians of the Norfolk and Norwich Hospital, and the successful candidate will be required to undertake medical duties under their supervision.

HOUSE SURGEONS (2). Post recognised for final F.R.C.S. examination requirements. Duties general surgical and including burns and plastic work. The beds at this Hospital are under the control of the Consultant Staff of the Norfolk and Norwich Hospital.

(4) **Norfolk and Norwich Hospital, Norwich**

Applications are also invited for the following appointments vacant 1st August, 1958 :—

SENIOR CASUALTY OFFICER AND HOUSE SURGEON to the Septic Block. Senior House Officer status. 2 Casualty Officers employed in the department. Post recognised for final F.R.C.S. examination requirements.

SENIOR OBSTETRIC HOUSE SURGEON. Senior House Officer status. 2 House Officers employed in the department. Post recognised for final D.Obst.R.C.O.G. examination requirements.

SENIOR ORTHOPÆDIC HOUSE SURGEONS. Senior House Officer status. 2 Orthopædic House Officers employed in the department. Post recognised for final F.R.C.S. examination requirements.

SENIOR HOUSE OFFICER ANÆSTHETISTS (2). Senior House Officer status. 2 House Officers employed in the department. Post recognised for D.A. and F.F.A. R.C.S. examination requirements.

Membership of a Medical Defence Society is a condition of appointment in each case.

Applications, giving full details, with names of 2 referees, to Group Secretary, Hospital Management Committee, St. Stephen's-road, Norwich.

NOTTINGHAM CITY HOSPITAL. (811 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Department of Thoracic Surgery. Post vacant immediately. Salary £819 10s. p.a. less £150 for residential emoluments. The appointment will be for 1 year.

Applications, stating age, nationality, qualifications and experience, together with copies of 3 testimonials, should be sent to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM CITY HOSPITAL. (811 Beds.) Applications are invited for the post of HOUSE PHYSICIAN, vacant on 18th August, 1958. Recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of not more than 3 testimonials, to be sent immediately to the Hospital Secretary, City Hospital, Hucknall-road, Nottingham.

NOTTINGHAM. CITY HOSPITAL. (811 Beds. Recognised for training for the D.A. and F.F.A. R.C.S.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time RESIDENT REGISTRAR (anæsthetics) required. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th July, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (orthopædic and fracture) required. Duties to commence about 18th July, 1958. Post offers exceptional experience in traumatic surgery.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Senior House OFFICER (surgery) required. Duties to commence 26th July, 1958.

Applications, stating age, qualifications, experience and nationality, together with copies of testimonials, to be sent to Group Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Resident Pre-registration HOUSE PHYSICIANS required. Posts vacant July. LOCUM required immediately.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

NOTTINGHAM GENERAL HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (casualty), duties to commence about 26th July. Establishment 3. Recognised for F.R.C.S. Post offers wide experience of casualty work.

Applications, stating age, nationality, qualifications and experience, together with copies of testimonials, to be sent to the Secretary, General Hospital, Nottingham.

NOTTINGHAM GENERAL HOSPITAL. Resident Pre-registration HOUSE SURGEONS required. Posts vacant July.

Applications, stating age, qualifications and experience, together with copies of testimonials, to be sent to Group Secretary.

OLDHAM AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of HOUSE OFFICER (pædiatrics). Recognised for D.C.H. The post offers excellent neonatal experience.

Applications, containing details of qualifications and experience, together with copies of 2 recent testimonials, should be forwarded to the Group Secretary, Central Offices, Rochdale-road, Oldham.

ORPINGTON HOSPITAL, Kent. Pre-registration HOUSE SURGEON for Orthopædic and E.N.T. post now vacant. Offers good experience in large general hospital pleasantly situated within easy reach of London.

Apply immediately to Surgeon-Superintendent (Orpington 27050).

OSWESTRY. ROBERT JONES AND AGNES HUNT ORTHOPÆDIC HOSPITAL. REGISTRARS in Orthopædics (2) (resident or non-resident) to commence 18th August and 1st October. Experienced specialty and higher surgical qualifications desirable.

Application forms from Secretary to be returned by 19th July; interviews 25th July.

OXFORD REGIONAL HOSPITAL BOARD. Registrar in Anæsthetics to the Aylesbury Group of hospitals. Recognised for F.F.A. R.C.S. and D.A. The appointment will be for 1 year and eligible for extension to a second year.

Application forms obtainable from Secretary, Registrar Committee, 43, Banbury-road, Oxford, to reach him by 21st July.

PAISLEY HOSPITALS MATERNITY UNIT. (Thornhill AND BARSHAW MATERNITY HOSPITALS.) Applications are invited from registered and provisionally registered medical practitioners for 2 RESIDENT HOUSE SURGEON posts (obstetrics). Posts become vacant on 1st August, 1958.

Applications to Group Medical Superintendent, Royal Alexandra Infirmary, Paisley.

PAISLEY. ROYAL ALEXANDRA INFIRMARY. House SURGEON (orthopædic) required for above Infirmary as from 1st August, 1958. Post approved for pre-registration practitioners and F.R.C.S.

Applications to Group Medical Superintendent.

PAISLEY. ROYAL ALEXANDRA INFIRMARY. House SURGEONS (general) required for above Infirmary as from 1st August, 1958. Posts approved for pre-registration practitioners and F.R.C.S.

Applications to Group Medical Superintendent.

PERTH. COUNTY AND CITY OF PERTH GENERAL HOSPITALS. The following House Officer posts will fall vacant on 1st August, 1958:—

Bridge of Earn Hospital

* 2 SENIOR HOUSE SURGEONS (Fracture and Orthopædic Unit).
* 1 HOUSE SURGEON (Fracture and Orthopædic Unit).
* 1 SENIOR HOUSE SURGEON (General Surgical Wards).
† 1 HOUSE SURGEON or SENIOR HOUSE SURGEON (E.N.T. Ward).
1 HOUSE PHYSICIAN (General Medical Wards).

Perth Royal Infirmary

2 HOUSE PHYSICIANS (General Medical Wards).

Notes

1. Senior House Officer posts are tenable for 12 months and Junior House Officer posts for 6 months.
2. All Junior House Officer posts are recognised for pre-registration hospital service.
3. Posts marked * are recognised by the Royal College of Surgeons under the regulations for the F.R.C.S.
4. Post marked † is recognised under the regulations for the D.L.O.

Applications, giving age, qualifications, experience and names of 2 referees, should be sent to the Group Medical Superintendent, Perth Royal Infirmary, Perth.

PONTEFRACT AND CASTLEFORD HOSPITAL MANAGEMENT COMMITTEE. ANÆSTHETIST (Junior Hospital Medical Officer) required for duties at hospitals throughout the Group. Post resident or non-resident.

Applications, giving details of experience and the names and addresses of 2 referees, to the Group Secretary, Great Northern House, Salter-row, Pontefract.

PONTYPRIDD AND RHONDDA HOSPITAL MANAGE-MENT COMMITTEE.

East Glamorgan Hospital, Church Village, near Pontypridd (336 Beds and large Outpatient Department. Committee's Base Hospital serving population of 174,000. Recognised for D.Obst.R.C.O.G., F.R.C.S., D.C.H., F.F.A.R.C.S., D.A.)

SENIOR HOUSE OFFICER (medicine), to commence 1st August, 1958.

SENIOR HOUSE OFFICER (obstetrics and gynæcology), to commence 1st August, 1958.

SENIOR HOUSE OFFICER (pædiatrics), to commence 1st August, 1958.

SENIOR HOUSE OFFICER (pathology), to commence immediately.

SENIOR HOUSE OFFICER (anæsthetics), to commence 15th August, 1958.

Llwynypia Hospital, Llwynypia, Rhondda (200 Beds including acute medical and chronic sick beds, serving area population of 112,000)

SENIOR HOUSE OFFICER (medicine), to commence 1st August, 1958. Person appointed to this vacancy will also be required to undertake duties at the Glyncornel Hospital and have part responsibility for the Group Infectious Diseases Hospital.

Applications, stating age, qualifications and experience, together with copies of 2 recent testimonials, to be sent to the Group Secretary, Courthouse-street, Pontypridd.

PLYMOUTH. THE SCOTT ISOLATION HOSPITAL. HOUSE OFFICER (third appointment) required for duty in general medical wards at the above Hospital. Immediate vacancy.

Applications, to include full details and names of 2 referees, to be sent to Group Secretary, Plymouth Special Hospital Management Committee, 8, Nelson-gardens, Stoke, Plymouth, as soon as possible.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL.

SENIOR HOUSE OFFICER in Anæsthetics, vacant September, 1958. Recognised for the D.A., and F.F.A.R.C.S.

HOUSE SURGEONS, pre-registration posts (2) both vacant immediately. Recognised for the F.R.C.S. Greenbank Road Hospital.

In all cases send names of 3 referees, also stating age, nationality, qualifications and experience, to the Group Secretary, 7, Nelson-gardens, Stoke, Plymouth.

PLYMOUTH. SOUTH DEVON AND EAST CORNWALL HOSPITAL, FREEDOM FIELDS. Central Casualty Department. RESIDENT SENIOR HOUSE OFFICER in Casualty, vacant immediately. Recognised for the F.R.C.S.

Applications, with names of 3 referees, to be sent to the Group Secretary.

POOLE GENERAL HOSPITAL, Poole, Dorset. Bourne-MOUTH AND EAST DORSET HOSPITAL MANAGEMENT COMMITTEE. Locum CASUALTY OFFICER (Senior House Officer) required for a fortnight from 21st July, 1958. No weekend duties.

Applications to the Hospital Secretary.

PORTSMOUTH GROUP HOSPITAL MANAGEMENT COMMITTEE.

Queen Alexandra Hospital

SENIOR HOUSE OFFICER, General Medicine and Dermatology. Vacant, 1st July, 1958.

Royal Portsmouth Hospital

Orthopædic (104 orthopædic beds)

SENIOR HOUSE OFFICER. Vacant 2nd August, 1958.

HOUSE OFFICER (pre-registration). Vacant 14th July, 1958.

Pædiatric and Medical (30 Beds)

HOUSE OFFICER (pre-registration). Vacant 12th August, 1958.

Saint Mary's Hospital

Surgery (120 surgical beds)

HOUSE OFFICERS (3) (pre-registration). Vacant now, 9th August, 1958, and 12th August, 1958.

Applications, stating age, experience and qualifications, together with the names of 2 referees, should be forwarded as soon as possible to E. H. HURST, St. Mary's Hospital, Milton-road, Portsmouth.

PRESTON ROYAL INFIRMARY. (400 Beds.) Senior HOUSE OFFICER in Orthopædics. Post recognised for F.R.C.S. Post vacant now.

Applications, with names of 2 referees, to Group Secretary, Preston and Chorley Hospital Management Committee, Royal Infirmary, Preston.

READING. BATTLE HOSPITAL. (391 Beds.) Reading AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited from registered medical practitioners for the post of RESIDENT JUNIOR HOUSE SURGEON (pre- or post-registration) required in the Accident and Orthopædic Department. F.R.C.S. recognised. Also casualty duties. Vacant, immediately.

Apply, stating age, qualifications with dates, nationality, present post, with copy of recent testimonial, to Secretary.

REDHILL. EAST SURREY HOSPITAL, Shrewsbury-road, REDHILL, SURREY. RESIDENT HOUSE SURGEON (Male). Pre-registration appointment vacant immediately. Opportunity of House Physician's post to follow if required.

Applications to Hospital Secretary.

ROCHDALE AND DISTRICT HOSPITAL MANAGE-MENT COMMITTEE. HOUSE PHYSICIANS required at Birch Hill Hospital. 3 resident posts available in July.

Apply at once to Group Secretary, Central Offices, Birch Hill Hospital, Rochdale, Lancs.

ROCHESTER, KENT. ST. BARTHOLOMEW'S HOS-PITAL. MEDWAY AND GRAVESEND HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of CASUALTY OFFICER (Senior House Officer grade). 1 of 2 in the department. Post vacant now and tenable for 6 months or 1 year. Recognised for F.R.C.S. Salary £819 10s.-p.a.

Applications, stating age, nationality, qualifications and experience, with recent testimonials, to Hospital Secretary.

ROCHFORD, ESSEX. GENERAL HOSPITAL. (620 Beds.) Locum SENIOR HOUSE OFFICER (general medicine) required from 17th July to 2nd August, 1958, inclusive.

Applications immediately to the Secretary.

ROCHFORD. GENERAL HOSPITAL. Locum Registrar required in the large Obstetric and Gynæcological Unit at the above Hospital for the period 18th July–10th August, 1958.

Applications immediately to the Secretary, Management Committee Offices, General Hospital, Rochford, Essex.

RUGBY. HOSPITAL OF ST. CROSS. House Surgeon in General Surgery (pre-registration). Recognised F.R.C.S. Resident.

Applications to Hospital Secretary.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. (301 Beds.) RESIDENT HOUSE OFFICER (general surgery) required from 7th July, 1958. Post is recognised for pre-registration purposes and for F.R.C.S.

Applications should be forwarded immediately to Medical Superintendent stating also names of 2 referees.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. Locum SENIOR HOUSE OFFICER in General Surgery required for period of 2 weeks from 8th to 22nd September next for busy surgical unit of 120 Beds.

Apply by letter or telephone to Medical Superintendent. Telephone: Romford 46066.

ROMFORD, ESSEX. RUSH GREEN HOSPITAL. Locum SURGICAL REGISTRAR required from 25th August to 7th September next for busy Surgical Unit of 120 Beds.

Apply by letter or 'phone to Medical Superintendent. (Tel.: Romford 46066).

ROMFORD GROUP HOSPITAL MANAGEMENT COMMITTEE. CLINICAL ASSISTANT required on the staff of the Regional Ophthalmic Centre at Oldchurch Hospital, Romford, to undertake 1 outpatient session per week, Thursday morning, in the Eye Clinic at Tilbury and Riverside Hospital, Tilbury.

Applications to be sent to Group Secretary, Oldchurch Hospital, Romford, as soon as possible.

ROTHERHAM. MOORGATE GENERAL HOSPITAL. (342 Beds, 38 Cots.) Locum SENIOR HOUSE OFFICER (surgery) required.

Applications, stating qualifications, experience, and names of 3 referees, to Secretary to Committee, Fern Bank, Doncaster-road, Rotherham.

RUSTINGTON, SUSSEX. ZACHARY MERTON MATERNITY HOSPITAL. (54 Beds.) WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for a RESIDENT HOUSE OFFICER (preferably Female), post vacant 24th July. Salary £467 10s.–£577 10s. p.a., according to experience, less £125 p.a. for emoluments.

Applications to be submitted to the undersigned immediately.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee,
129, Brighton-road, Worthing, Sussex.

RYDE. ROYAL I.W. COUNTY HOSPITAL. Isle of Wight GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE OFFICER for pre-registration service (salary £467 10s. or £522 10s., according to experience) or SENIOR HOUSE OFFICER (salary £819 10s.) required as House Surgeon. Post recognised for F.R.C.S. Vacant August.

Applications, with names of 2 referees, to the Hospital Secretary, not later than 19th July.

RYDE. ROYAL I.W. COUNTY HOSPITAL. Isle of Wight GROUP HOSPITAL MANAGEMENT COMMITTEE. HOUSE PHYSICIAN required (pre-registration post). Vacant 1st August, 1958.

Applications, with names of 2 referees, to Hospital Secretary not later than 12th July.

SALISBURY GENERAL HOSPITAL. Applications are invited for the post of SENIOR RESIDENT HOUSE SURGEON or RESIDENT HOUSE SURGEON, vacant 11th September. Appointment recognised for pre-registration candidates, and also Fellowship regulations. Department has over 50 Beds and large outpatient turnover, dealing with fractures and all types of orthopædic surgery.

Applications, stating age, nationality, qualifications and experience, and naming 2 referees, to the Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SALISBURY GENERAL HOSPITAL. Applications are invited for the appointment of RESIDENT HOUSE SURGEON/HOUSE PHYSICIAN to run consecutively in this order for a period of 6 months in each post from 19th August. Posts open to pre-registration candidates.

Apply, naming 2 referees, to Group Secretary, Salisbury Group Hospital Management Committee, Odstock Hospital, Salisbury.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the following appointments, which will be for 1 year in the first instance, and will become vacant during September or October, 1958:—

REGISTRAR in Anæsthetics based at the Western Infirmary, Glasgow.

5 REGISTRARS in Laboratory Medicine based as follows:—
- 2 at the Western Infirmary, Glasgow.
- 1 at the Royal Infirmary, Glasgow.
- 1 at the Victoria Infirmary, Glasgow.
- 1 at the Infirmary, Kilmarnock.

2 REGISTRARS in Medicine:—
- 1 at the Western Infirmary, Glasgow, with duties in neurology at Killearn Hospital.
- 1 at Falkirk Royal Infirmary.

2 REGISTRARS in Obstetrics and Gynæcology:—
- 1 for duty at the Royal Maternity and Royal Samaritan Hospitals, Glasgow.
- 1 at Cresswell Maternity Hospital, Dumfries.

REGISTRAR in Ophthalmology based at the Western Infirmary, Glasgow.

REGISTRAR in Psychiatry based at the Glasgow Royal Mental Hospital.

REGISTRAR in Radiotherapy based at the Western Infirmary, Glasgow.

6 REGISTRARS in Surgery based as follows:—
- 1 at the Western Infirmary, Glasgow, with duties for a period at the Lewis Hospital, Stornoway, or at the Vale of Leven Hospital, Dumbartonshire.
- 3 at the Royal Infirmary, Glasgow.
- 1 at Duncon Cottage Hospital with duties at Broadstone Hospital, Port Glasgow.
- 1 at Stobhill General Hospital, Glasgow, and with duties on a rotational basis at Falkirk Royal Infirmary.

REGISTRAR in Tuberculosis based at Ruchill Hospital, Glasgow.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 19th July, 1958.

SCOTLAND. WESTERN REGIONAL HOSPITAL BOARD. Applications are invited for the appointment of REGISTRAR in Surgery based at the Royal Alexandra Infirmary, Paisley, which will be for 1 year in the first instance.

Applications (12 copies), stating date of birth, qualifications, experience, present appointment, and the names of 3 referees, to reach the Secretary, Western Regional Hospital Board, 64, West Regent-street, Glasgow, C.2, by 19th July, 1958.

SCOTLAND. NORTHERN REGIONAL HOSPITAL BOARD. Applications are invited for the post of SENIOR REGISTRAR in Obstetrics and Gynæcology. The main duties are at Raigmore Hospital and the Royal Northern Infirmary, Inverness.

Schedules of application and further particulars are obtainable from the undersigned, with whom applications should be lodged by 2nd August, 1958.

A. M. FRASER, M.D.,
Secretary and Administrative Medical Officer.
Office of the Northern Regional Hospital Board,
Reay House, 17, Old Edinburgh-road, Inverness.

SHEFFIELD. CITY GENERAL HOSPITAL. (658 Beds.) SHEFFIELD REGIONAL HOSPITAL BOARD. Whole-time NON-RESIDENT REGISTRAR in General Medicine required 8th September. Some duties also at Firvale Infirmary (chronic sick). Post offers special experience in chronic respiratory disease and pulmonary function tests. Appointment for 1 year in first instance.

Apply to Secretary, Sheffield Regional Hospital Board, Old Fulwood-road, Sheffield, by 14th July, 1958, giving age, nationality, qualifications, present and previous appointments with dates, naming 3 referees.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS BOARD OF GOVERNORS and THE SHEFFIELD REGIONAL HOSPITAL BOARD. Reciprocal training scheme for Senior Registrars. Applications invited for the post of SENIOR REGISTRAR in Radiology, with initial tenure in the Department of Radiology at the Royal Infirmary/Royal Hospital, Sheffield. Candidates should hold a Diploma in Diagnostic Radiology. Appointment for 1 year in the first instance and renewable annually thereafter. The successful candidate will be transferred to a regional hospital for the second phase of his appointment in accordance with the arrangements under the reciprocal training scheme. Renewal of appointment and transfer will be subject to satisfactory work and progress.

Applications, stating age, qualifications and experience, with the names of 3 referees, to the Chief Administrative Officer, United Sheffield Hospitals, West-street, Sheffield, 1, not later than 11th July, 1958.

SHEFFIELD. THE UNITED SHEFFIELD HOSPITALS. CHILDREN'S HOSPITAL. RESIDENT SENIOR HOUSE OFFICER (surgery) or HOUSE SURGEON according to experience required from 5th August, 1958.

Applications, with the names of 3 referees or testimonials, to the Superintendent, Children's Hospital, Western Bank, Sheffield, 10, by 14th July, 1958.

SHREWSBURY. EYE, EAR AND THROAT HOSPITAL. SENIOR HOUSE OFFICER (E.N.T.). Duties at E.N.T. Hospital (68 Beds) and Copthorne Hospital (168 Beds). Post recognised for the D.L.O.R.C.S. and F.R.C.S. Vacant immediately.

Applications, with copy testimonials, to the Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) HOUSE SURGEON. Vacant immediately. Pre-registration candidates eligible. Recognised for the F.R.C.S.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. ROYAL SALOP INFIRMARY/COPTHORNE HOSPITAL. (500 Beds.) HOUSE PHYSICIAN, pre-registration candidates eligible. Vacant 1st August, 1958.

Applications, with copy testimonials, to Group Secretary, Shrewsbury Hospital Group, Royal Salop Infirmary, Shrewsbury.

SHREWSBURY. SHELTON MENTAL HOSPITAL. (1000 Beds.) SHREWSBURY HOSPITAL GROUP. JUNIOR HOSPITAL MEDICAL OFFICER. Appointment for 1 year in first instance. Single residential accommodation available. Recognised for D.P.M. Associated outpatient clinics.

Applications to Medical Superintendent.

SIDCUP, KENT. QUEEN MARY'S HOSPITAL. Resident SENIOR HOUSE OFFICER (anæsthetics) required from 15th July, 1958. Salary £819 10s., less £150 p.a. for residential emoluments. The post is recognised for the F.F.A. R.C.S. and D.A.

Applications, stating nationality, age, qualifications and experience, together with the names and addresses of 2 referees, should be sent to the Secretary.

SKIPTON (near). GRASSINGTON HOSPITAL. (208 Beds.) SENIOR HOUSE OFFICER required for the above Hospital, which provides treatment for tuberculous patients, men and women. Accommodation available for single applicants.

Applications to Medical Superintendent.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. HOUSE SURGEON required in Department of Obstetrics and Gynæcology to work with part-time Registrar. Post not recognised for D.Obst.R.C.O.G.

Applications, with names of 2 referees, to Secretary.

SLOUGH, BUCKINGHAMSHIRE. UPTON HOSPITAL. Locum RESIDENT ANÆSTHETIC REGISTRAR required for 21st July–3rd August.

Applications, with names of 2 referees, to Secretary.

SOUTHAMPTON GENERAL HOSPITAL. (465 Beds. Recognised for the Membership and Diploma examinations of the R.C.O.G.) RESIDENT HOUSE SURGEON (pre-registration) to the Gynæcological and Obstetric Unit required beginning of August.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL. (274 Beds. Recognised for F.R.C.S.) ORTHOPÆDIC HOUSE SURGEON (pre-registration candidates eligible). Post offers excellent experience in the treatment of traumatic conditions.

Applications to Group Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTHAMPTON. ROYAL SOUTH HANTS HOSPITAL (274 Beds) and SOUTHAMPTON GENERAL HOSPITAL (465 Beds). SENIOR HOUSE OFFICER (E.N.T.) required end August. This post is recognised for the F.R.C.S. (Eng.) and D.L.O. examinations and provides experience in all branches of E.N.T. work. The Group includes a diagnostic and distributing hearing aid centre.

Applications, with copies of recent testimonials, should be forwarded as soon as possible to the Secretary, Southampton Group Hospital Management Committee, Bullar-street, Southampton.

SOUTH EAST METROPOLITAN REGIONAL HOSPITAL BOARD. Applications are invited for an appointment as a Whole-time REGISTRAR in Psychiatry to fill a vacancy in the approved trainee establishment in the Darenth and Stone Group of hospitals for duty at Darenth Park, Dartford (for the training of mental defectives). The Hospital is situate 15 miles from London and facilities are made available for postgraduate study. Students from certain teaching hospitals attend for demonstrations. Previous experience in general medicine is desirable. The appointment will be in accordance with the terms and conditions of service of hospital medical and dental staff (England and Wales), and will be for 1 year in the first instance.

Applications, giving particulars of age, qualifications and experience with relevant dates, together with the names and addresses of 2 referees, to be sent to the Secretary, Registrars Committee, South East Metropolitan Regional Hospital Board, 11, Portland-place, W.1, not later than 19th July, 1958.

SOUTHEND-ON-SEA GENERAL HOSPITAL. Applications are invited for the post of TEMPORARY CASUALTY OFFICER (Registrar). Post vacant 18th August, 1958. Duties chiefly in Casualty Department, which is under the supervision of the Consultant in Orthopædic Surgery. Opportunities for work in fracture clinics in association with work of Orthopædic Department. The post is recognised for the F.R.C.S. if held for 6 months.

Applications, stating age, qualifications, and experience, to be sent to the Secretary by 17th July, 1958.

SOUTHEND-ON-SEA GENERAL HOSPITAL. Applications are invited for the post of RESIDENT DEPUTY CASUALTY OFFICER (Senior House Officer grade) with duties in the Fracture and Orthopædic Department, for a period of 6 months from 14th July, 1958. The post is recognised for the F.R.C.S.

Applications, stating age, qualifications and experience, with copies of recent testimonials, should reach the Secretary as soon as possible.

SOUTHPORT GENERAL INFIRMARY. (189 Beds.)
HOUSE PHYSICIAN (general medicine).
HOUSE PHYSICIAN (general medicine and ophthalmology).
HOUSE SURGEON (general surgery and gynæcology).

Appointments vacant July. House Surgeon post recognised for F.R.C.S.

Apply, stating age, qualifications, nationality, experience, and post required, with 2 copies testimonials, to Group Secretary, Southport, and District Hospital Management Committee, Promenade Hospital, Southport.

ST. ALBANS CITY HOSPITAL. (384 Beds.) NORTH-WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Whole-time SURGICAL REGISTRAR required for duties in General Surgical and Orthopædic Departments. Post vacant about 21st September, 1958. Hospital may be visited by direct appointment.

Application forms obtainable from, and returnable to, Secretary, Mid-Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans, Herts, by 22nd July, 1958.

ST. ALBANS CITY HOSPITAL, St. Albans, Hertfordshire. (384 Beds.) Locum Tenens ANÆSTHETIC REGISTRAR, resident, required for the period 10th August–7th September, 1958, inclusive. Post recognised for F.F.A. R.C.S. and D.A.

Applications to Secretary, Mid Herts Group Hospital Management Committee, Bleak House, Catherine-street, St. Albans.

ST. ASAPH HOSPITAL, St. Asaph, Flintshire. Appointment of HOUSE OFFICER. Duties divided between ophthalmology (16 Beds), E.N.T. (12 Beds), and oral surgery (4 Beds).

Applications, stating age, qualifications and experience, accompanied by 2 recent testimonials, to be sent forthwith to the Group Secretary, Clwyd and Deeside Hospital Management Committee, Rhianfa, Russell-road, Rhyl.

STAFFORD. STAFFORDSHIRE GENERAL INFIRMARY. (175 Beds—Recovery Unit 32 Beds.) HOUSE SURGEON. Pre-registration post. Vacant 9th July. At end of service the successful applicant will be considered for appointment to a pre-registration post of House Physician if he or she has not held such an appointment.

Applications to Group Secretary, Stafford Hospital Management Committee, 13, Foregate-street, Stafford.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. Applications invited for HOUSE OFFICER (medical), vacant early July. Recognised pre-registration post.

Detailed applications to the Secretary at the Hospital.

STOKE-ON-TRENT. CITY GENERAL HOSPITAL. HOUSE PHYSICIAN (paediatrics) required. Post vacant very shortly. Pre-registration. Hospital recognised for D.C.H.

Detailed applications, with copy testimonials, to Hospital Secretary.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE PHYSICIAN required. Pre-registration post vacant shortly.

Detailed applications with copy testimonials to Hospital Secretary, North Staffordshire Royal Infirmary, Stoke-on-Trent.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. SENIOR HOUSE OFFICER (anæsthetics) required. Post recognised for F.F.A. R.C.S. and D.A. Medical library facilities available.

Detailed applications to Hospital Secretary as soon as possible.

STOKE-ON-TRENT. NORTH STAFFORDSHIRE ROYAL INFIRMARY. HOUSE OFFICER (general surgery) required. Recognised for F.R.C.S. Post vacant very shortly.

Detailed applications, with copy testimonials, to Hospital Secretary, North Staffordshire Royal Infirmary, Stoke-on-Trent.

SUTTON. BELMONT HOSPITAL. St. Ebba's and BELMONT GROUP HOSPITAL MANAGEMENT COMMITTEE, SOUTH WEST METROPOLITAN REGIONAL HOSPITAL BOARD. Locum PSYCHIATRIC REGISTRAR required at above Hospital from 13th July, 1958. The Hospital is principally concerned with the treatment of neuroses and the early psychoses; there are ample opportunities for research, and the Hospital, which is recognised for the D.P.M., takes an active part in teaching in association with teaching hospitals.

Further particulars may be obtained from the Medical Administrator, Belmont Hospital, Brighton-road, Sutton, Surrey.

SWANSEA HOSPITAL, Swansea. (413 Beds.) GLANTAWE HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER in the Traumatic and Orthopædic Department of the above Hospital. The post is recognised under the F.R.C.S. regulations for 6 months' casualty training. It offers exceptional experience in all aspects of traumatic surgery as occurring in a large industrial centre and port.

Applications, stating age and experience together with copies of 2 recent testimonials, should be forwarded to the Hospital Secretary. T. E. JONES, Group Secretary.

SWANSEA. MORRISTON HOSPITAL. Glantawe HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of SENIOR HOUSE OFFICER in the Department of Neurosurgery at the above Hospital. The Department is the centre for neurosurgery for South West Wales, and the post offers facilities for the study of neurology for those studying for higher qualifications. Vacancy 1st August, 1958.

Applications, together with copies of 2 recent testimonials, should be forwarded to the Medical Superintendent of the Hospital. T. E. JONES, Group Secretary.

SWINDON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for post of RESIDENT HOUSE PHYSICIAN in acute medical unit of 64 Beds at St. Margaret's Hospital. Recognised for training under pre-registration internship regulations.

Full details, with names of 3 referees, to Secretary, 7, Okus-road, Swindon, as soon as possible.

TAUNTON AND SOMERSET HOSPITAL. Senior HOUSE OFFICER (anæsthetics) required. Post vacant now. Is recognised for F.F.A.R.C.S. and D.A. A Registrar in Anæsthetics is also employed in the South Somerset Clinical Area, in which the above is the principal general hospital.

Applications, stating age, nationality, experience in anæsthetics (if any), together with the names of 2 referees, to the Group Secretary, Taunton Hospital Management Committee, Musgrove Park Hospital, Taunton, immediately.

TAUNTON AND SOMERSET HOSPITAL. Applications are invited for the post of SENIOR HOUSE OFFICER (casualty and orthopædic).

Applications, stating age, nationality and qualifications, together with the names of 2 referees, should be forwarded to the Group Secretary, Taunton Hospital Management Committee, Taunton and Somerset Hospital, Musgrove Park Branch, Taunton, Somerset.

TAUNTON AND SOMERSET HOSPITAL, Taunton, SOMERSET. (423 Beds.) HOUSE OFFICERS (general surgery) required, 2 pre-registration posts recognised for F.R.C.S., vacant now.

Applications, stating age, nationality and qualifications, to the Group Secretary, Taunton Hospital Management Committee, c/o Musgrove Park Hospital, Taunton.

TREDEGAR GENERAL HOSPITAL, Tredegar, MONMOUTHSHIRE. HOUSE SURGEON required at above Hospital from 11th July. Commodious family flat available.

Apply to Group Secretary, Rhymney and Sirhowy Valleys Hospital Management Committee, Central Offices, Caerphilly-road, Ystrad Mynach, Hengoed, Glam.

TUNBRIDGE WELLS (near). PEMBURY HOSPITAL, PEMBURY, KENT. (357 Beds.) TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for pre-registration post of HOUSE SURGEON. 6 months' appointment. Vacant now.

Apply, giving details of age, experience and qualifications, to Surgeon-Superintendent.

TUNBRIDGE WELLS (near). PEMBURY HOSPITAL, PEMBURY, KENT. (357 Beds.) TUNBRIDGE WELLS GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications invited for pre-registration post of ORTHOPÆDIC HOUSE SURGEON. 6 months' appointment. Vacant now.

Apply, giving details of age, experience and qualifications, to Surgeon-Superintendent.

UXBRIDGE CHEST CLINIC, High-street, Uxbridge, MIDDLESEX. Locum REGISTRAR, whole-time, required for approximately 1 year. Duties mainly at Chest Clinic, but appointment associated with Hillingdon, St. Bernard's, and Southall-Norwood Hospitals. Car would be desirable.

Further information obtainable from the Physician.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (211 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital. This is a pre-registration post and is recognised for F.R.C.S. Salary according to the National Health Service scale. Post vacant mid-July.

Please send copies of recent testimonials, with applications, to the Administrator.

WATFORD, HERTFORDSHIRE. PEACE MEMORIAL HOSPITAL. (211 Beds.) Applications are invited for the post of RESIDENT ANÆSTHETIST (Senior House Officer grade) to the Watford Hospitals. Post vacant 1st July.

Applications, together with copies of not more than 2 recent testimonials, to the Administrator.

WATFORD. GROUP 9 PATHOLOGICAL LABORATORY. Applications are invited for the post of NON-RESIDENT PATHOLOGIST (Senior House Officer grade). The appointment is tenable for 1 year in the first instance.

Applications with names of 3 referees, should be sent to the Pathologist in Charge, Group 9 Laboratory, 6, Rickmansworth-road, Watford, Herts.

WATFORD. SHRODELLS HOSPITAL. (General hospital, 366 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER to the Geriatric Unit. Resident or non-resident, to take up duty about July 25th. This unit of 180 Beds, under a full-time Consultant Geriatrician, offers excellent clinical experience in diagnosis and treatment of acute and other illnesses in the elderly. Full laboratory and radiological facilities. Adequate time for reading.

Applications, together with copies of not more than 2 testimonials, should reach the Medical Administrator as soon as possible.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. (Regional Thoracic Centre.) Applications invited for positions of SENIOR HOUSE PHYSICIAN and SENIOR HOUSE SURGEON. Salary £819 10s. p.a. £150 p.a. charged for accommodation.

Address written applications, giving full personal particulars, details of experience and 2 names and addresses for reference, to W. BOWRING, Group Secretary, Pinderfields General Hospital, Wakefield.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Applications invited for position of SENIOR HOUSE OFFICER in the Neurological Department. Salary £819 10s. p.a. A charge of £150 p.a. is made for accommodation.

Address written applications, giving full personal particulars and details of experience, &c., together with 2 names and addresses for reference, to W. BOWRING, Group Secretary, Pinderfields General Hospital, Wakefield.

WAKEFIELD. PINDERFIELDS GENERAL HOSPITAL. Locum Tenens SENIOR HOUSE PHYSICIAN required for the period 17th–31st July, inclusive. Salary £15 19s. per week. Charge for accommodation at the rate of £150 p.a.

Address written applications, giving full personal particulars, details of experience and 2 names and addresses for reference, to W. BOWRING, Group Secretary, Pinderfields General Hospital, Wakefield.

WARRINGTON AND DISTRICT HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the resident post of SENIOR HOUSE OFFICER (geriatrics) (Male or Female) for active geriatric units at Whitecross Hospital and Aikin Street Hospital, Warrington. Good clinical experience and study time for higher qualifications. Scale of salary £819 10s. p.a., less a deduction of £150 p.a. for residential emoluments.

Applications to be forwarded to HENRY L. BOOT, Group Secretary, c/o General Hospital, Warrington, Lancs.

WARRINGTON INFIRMARY. Applications are invited from Males and Females for the post of RESIDENT CASUALTY OFFICER (graded as Junior Hospital Medical Officer) at the above Hospital. The post is recognised for the F.R.C.S. Scale of salary £852 10s.–£55–£1182 10s. less a deduction of £170 for residential emoluments. A whole-time Senior Hospital Medical Officer is in charge of the Department.

Applications, stating age, experience and qualifications, should be forwarded to—

HENRY L. BOOT, Group Secretary,
Warrington and District Hospital Management Committee,
c/o General Hospital, Warrington, Lancs.

WEST FIFE HOSPITALS BOARD OF MANAGEMENT. Applications are invited for the post of JUNIOR HOSPITAL MEDICAL OFFICER (resident) at Glenlomond Hospital, By Kinross (150 Beds—respiratory and non-respiratory tuberculosis).

Applications giving full particulars of previous experience, should be lodged with the Physician-Superintendent, Glenlomond Hospital, By Kinross.

WESTON-SUPER-MARE GENERAL HOSPITAL. (104 Beds.) Applications are invited from duly qualified medical practitioners for the pre-registration appointment of HOUSE SURGEON (resident). Vacancy 15th July, 1958.

Applications, stating age, qualifications, together with names and addresses of 2 referees, should be addressed to the Secretary, Weston-super-Mare Hospital Management Committee.

WINCHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. SOUTH WEST METROPOLITAN HOSPITAL BOARD. REGISTRAR in Anæsthetics (Registrar grade) required at the Royal Hampshire County Hospital, Winchester, with duties in the Lord Mayor Treloar Group, Alton. Post recognised for the F.F.A. R.C.S. and is resident or non-resident. Vacant mid-August.

Forms of application obtainable from Group Secretary, Royal Hampshire County Hospital, Winchester.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. ASTLEY HOSPITAL, ASTLEY, NEAR MANCHESTER. SENIOR HOUSE OFFICER in Surgery required. Duties include gynæcology and casualty. Resident post. Vacant now.

Apply Secretary, Knowsley House, Wigan.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE.

Royal Albert Edward Infirmary, Wigan
HOUSE SURGEON,

Leigh Infirmary, Leigh
HOUSE SURGEON,

Pre-registration posts.

Applications, with names of 2 referees, to Secretary, Knowsley House, Wigan.

WIGAN AND LEIGH HOSPITAL MANAGEMENT COMMITTEE. WHELLEY HOSPITAL. (71 acute medical beds.) HOUSE PHYSICIAN, pre-registration post.

Applications, with names of 2 referees, to Secretary, Knowsley House, Wigan.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. HOUSE SURGEON—pre-registration post. Vacant now.

Applications to Secretary, Royal Albert Edward Infirmary, Wigan.

WIGAN. ROYAL ALBERT EDWARD INFIRMARY. (200 Beds.) SENIOR HOUSE OFFICER in Orthopædic Surgery.

Applications to Secretary, Royal Albert Edward Infirmary, Wigan.

WINDSOR. KING EDWARD VII HOSPITAL. Locum RESIDENT ANÆSTHETIC REGISTRAR required, 14th July –4th August.

Applications, giving age, nationality, qualifications and experience, with names of 2 referees, to Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. Registrar (Casualty Officer), resident, required. There is an Accident Unit of 30 Beds at the Hospital and with the Casualty Department forms part of the Accident Service for the Windsor Group and includes duties with the E.N.T. and Eye Departments. Candidates should have had previous experience in the treatment of acute injuries.

Application forms from and returnable to Secretary, Windsor Group Hospital Management Committee, Alma-road, Windsor.

WINDSOR. KING EDWARD VII HOSPITAL. Locum RESIDENT SURGICAL REGISTRAR required 23rd July–6th August.

Applications, giving age, nationality, qualifications and experience, with names of 2 referees, to Secretary.

WINDSOR. KING EDWARD VII HOSPITAL. House PHYSICIAN required, Male or Female, for post vacant 27th July.

Applications, with copies of 3 recent testimonials, stating age, qualifications with dates, and nationality, to Secretary.

WOLVERHAMPTON. NEW CROSS HOSPITAL. (634 Beds.) 1 SENIOR HOUSE OFFICER and 2 HOUSE OFFICERS (pre-registration), Medicine. Acute medical beds. Vacant now.

Applications to Hospital Secretary.

WOLVERHAMPTON. NEW CROSS HOSPITAL. (634 Beds.) Pre-registration HOUSE OFFICER in General Surgery. Post recognised for the F.R.C.S. Vacant early July.

Applications to Hospital Secretary.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An associated hospital of the Birmingham University Medical School.) Pre-registration HOUSE OFFICER (pædiatrics). Post recognised for D.C.H. Vacant 27th July.

Apply, giving age and qualifications and copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An associated hospital of the Birmingham University Medical School.) Pre-registration HOUSE OFFICERS (general surgery). Vacancies occur 2nd, 9th, and 17th July. All posts recognised for F.R.C.S.

Apply, giving age and qualifications and copies of 2 testimonials, to the Secretary.

WOLVERHAMPTON. THE ROYAL HOSPITAL. (An associated hospital of the Birmingham University Medical School.) ORTHOPÆDIC SENIOR HOUSE SURGEON for Fracture and Orthopædic Department. Post recognised for F.R.C.S. Vacant immediately.

Apply, with 2 testimonials, to the Secretary.

WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the post of ANÆSTHETIC REGISTRAR in the above Group (Southlands Hospital, 411 Beds, Worthing Hospital 210 Beds). Vacant end of August. Post is recognised for the D.A. and F.F.A. R.C.S.

Forms of application are obtainable from the undersigned and should be returned immediately.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.
129, Brighton-road, Worthing, Sussex.

WORTHING GROUP HOSPITAL MANAGEMENT COMMITTEE and CHICHESTER GROUP HOSPITAL MANAGEMENT COMMITTEE. Applications are invited for the appointment of REGISTRAR in Physical Medicine to be made jointly by the bodies concerned. The post, which is now vacant, will entail working in both the Worthing and Chichester Groups, and the successful candidate will work under the Consultant in Physical Medicine. This post is recognised for Part II of the Diploma of Physical Medicine.

Application forms are obtainable from the undersigned and should be returned immediately.

LOCUM required for this post pending appointment.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.
129, Brighton-road, Worthing, Sussex.

WORTHING HOSPITAL, Lyndhurst-road, Worthing, SUSSEX. (210 Beds. Acute general.) The post of HOUSE SURGEON will be vacant from 10th August.

Applications from either registered medical practitioners or pre-registration candidates, stating age, qualifications, experience, nationality and enclosing copies of 2 recent testimonials to be forwarded to the Group Secretary immediately.

A. V. OAKTON, Group Secretary,
Worthing Group Hospital Management Committee.

WREXHAM. WAR MEMORIAL HOSPITAL. (230 Beds.) Applications are invited for the post of SENIOR HOUSE OFFICER in the Orthopædic Department of the above Hospital. The post is a residential one and affords particular facilities for postgraduate study. Successful applicant will be allowed to attend for 2 days a month at the Robert Jones and Agnes Hunt Orthopædic Hospital, Oswestry. The Hospital is recognised for the Diploma of F.R.C.S. (England, Edinburgh, and Ireland).

Applications, stating age, nationality, qualifications, and experience, together with copies of 2 recent testimonials, to be addressed to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WREXHAM. MAELOR GENERAL HOSPITAL. (591 Beds.) Applications are invited for the post of PÆDIATRIC HOUSE PHYSICIAN at the above Hospital, to commence 1st August, 1958. The appointment is recognised for the D.C.H. and for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, Denbighshire.

WREXHAM. MAELOR GENERAL HOSPITAL (591 Beds) and WAR MEMORIAL HOSPITAL, WREXHAM (230 Beds). Applications are invited for HOUSE PHYSICIAN posts at the above Hospitals, to commence 1st August, 1958. The appointments are recognised for pre-registration purposes.

Applications, stating age, nationality, qualifications and experience, together with copies of 2 recent testimonials, should be addressed to the Group Secretary, Wrexham, Powys and Mawddach Hospital Management Committee, Maelor General Hospital, Wrexham, Denbighshire.

WREXHAM (near). TREVALYN MANOR MATERNITY HOSPITAL, ROSSETT, near WREXHAM. (47 Beds.) Applications are invited for the post of HOUSE SURGEON at the above Hospital, to commence duties on 1st September, 1958. The Hospital is a Part II Midwifery Training School and deals with normal and abnormal midwifery.

Applications, stating age, nationality, qualifications and experience, with copies of 2 recent testimonials, to be sent to the Group Secretary, Maelor General Hospital, Wrexham, as soon as possible.

WORKINGTON INFIRMARY, Cumberland. (150 Beds, pre-registration post.) HOUSE OFFICER or SENIOR HOUSE OFFICER for orthopædic, surgical and casualty duties. Vacant now.

Applications, with dates, and names of 2 referees, to Group Secretary.

DUBLIN. ST. KEVIN'S HOSPITAL. The Dublin Board of Assistance invites applications for appointment to posts of REGISTRAR in Obstetrics.

Period of appointment: 1 year, which may be extended for further periods to a total of 3 years.

Salary: first year £650, second year £750, third year £850; with full board and residence, plus temporary bonus at the rate of 10% on first £300 and 6¼% on balance of remuneration. A further £100 p.a. is payable on obtaining certain higher qualifications.

Full particulars and application form may be obtained from the Establishment Department, 1, James-street, Dublin. Latest date for receipt of completed application forms—14th July, 1958.

J. J. NOLAN, Secretary.

NORTHERN IRELAND HOSPITALS AUTHORITY. Applications are invited for the undernoted whole-time posts as REGISTRAR:—

(*a*) 1 post in orthopædic surgery at hospitals managed by the North West Hospital Management Committee.

(*b*) 2 posts in radiology at hospitals managed by the Belfast and South Belfast Hospital Management Committees.

(*c*) 2 posts in obstetrics and gynæcology; based in Belfast but required to undertake relief duty at other hospitals as may be required.

(*d*) 3 posts in psychiatry: 1 at Downshire Hospital, Downpatrick, and 2 under the Authority's Special Care Scheme.

The terms and conditions will be in accordance with the application of the Spens Report to Northern Ireland.

Applications to be made on a form obtainable (with further particulars) from the Secretary, Northern Ireland Hospitals Authority, 44–46, Queen-street, Belfast, and to be returned not later than 21st July, 1958.

NAIROBI. H.H. THE AGA KHAN PLATINUM JUBILEE HOSPITAL. Applications are invited from registered medical practitioners for the following appointments for this multiracial hospital which is expected to open in the near future. Initially there will be 32 Beds in general medicine, 32 Beds in general surgery, 28 Beds in obstetrics, 20 Beds in paediatrics, and outpatient and casualty services.

1. A RESIDENT MEDICAL OFFICER.
2. A RESIDENT SURGICAL OFFICER.

For these posts the normal period of tenure will be 1 year, with a possibility of extension for a further year. The salary for the first year will be £1200 p.a. and for the second year £1250 p.a. Assistance in housing. Candidates for these appointments must have completed pre-registration.

Applications, giving full details of qualifications and experience and stating the names of 2 referees, should be addressed, not later than 14th July, to the Administrator, H.H. The Aga Khan Platinum Jubilee Hospital, c/o St. George's Hospital, Hyde Park Corner, London, S.W.1.

NEW YORK. NEW ROCHELLE HOSPITAL, New ROCHELLE, NEW YORK, U.S.A. (383-Bed general community hospital.) Approved by the Joint Commission on Accreditation of Hospitals. Also approved by the American College of Surgeons and American Medical Association for Internship and Residency training. Only graduates from approved university schools accepted. Internships available for the 1-year term commencing 1st July, 1958. Stipend is $200 per month plus complete maintenance.

Apply Superintendent.

CANADA. REGINA GENERAL HOSPITAL, Regina, SASKATCHEWAN. The following vacancies exist for appointments in an 800-Bed hospital, all services very active:—

(1) JUNIOR ROTATING INTERNSHIPS, stipend $150 per month, plus full maintenance.

(2) ASSISTANT-RESIDENTS in Pathology, stipend $200 per month, plus full maintenance.

(3) ASSISTANT-RESIDENTS and RESIDENTS in Surgery, stipend at the rate of $200 per month for Assistant-Residents and $250 per month for Residents, plus full maintenance.

Apply: Superintendent, Regina General Hospital, Regina, Saskatchewan, Canada.

CANADA. OAKVILLE-TRAFALGAR MEMORIAL HOS-PITAL, Reynolds and Division Streets, OAKVILLE, ONTARIO, CANADA. HOSPITAL INTERNSHIPS open to emigrating British physicians. 1 required for July (6-month contract) and 1 for January (6-month contract). Above average remuneration and opportunity to prepare for council licensing examinations.

Inquire to Administrator.

Public Appointments

FACTORY DOCTORS. Factories Acts, 1937 and 1948. The following appointment as Appointed Factory Doctor is vacant. Apply to Chief Inspector of Factories, 19, St. James's-square, London, S.W.1.

District	*County*	*Latest date for receipt of application*
MONMOUTH ..	MONMOUTH ..	19TH JULY, 1959

DERBYSHIRE COUNTY COUNCIL. County Health DEPARTMENT. MATERNAL AND CHILD WELFARE MEDICAL OFFICER (Female). Applications are invited from fully qualified medical practitioners for this whole-time superannuable post. Candidates should be experienced in antenatal work, midwifery, and children's diseases, as they will be required to hold consultations at the Council's Maternity and Child Welfare Clinics and Centres, and to perform such other duties as may be required. Salary £1050–£50–£1200–£55–£1475 p.a., plus a car allowance.

Particulars and application forms are obtainable from Dr. J. B. S. MORGAN, County Medical Officer, County Offices, Matlock, and should be returned to him duly completed not later than 14th July, 1958.

GLASGOW. CORPORATION OF GLASGOW. Health AND WELFARE DEPARTMENT. Applications are invited for appointment as CITY BACTERIOLOGIST in the Health and Welfare Department at a salary scale of £1920 by annual increments of £60(2) and £65(3)–£2235 p.a. This is a responsible post for which a man of considerable all-round experience is required. Applicants should hold a higher degree in medicine and a Diploma in Public Health or equivalent qualification and must be fully experienced in diagnostic bacteriology, public-health laboratory work and epidemiology. A good clinical background and administrative experience are desirable. The Public Health Laboratory deals with the bacteriological and serological work of the Public Health Services in the City and Port of Glasgow and of general medical practitioners and also undertakes work for the Hospital Service and other local authorities. The post is superannuable and the successful applicant will require to pass a medical examination.

Applications, stating age and giving full particulars of qualifications, training, experience and publications, together with the names of 3 referees, should be addressed to me endorsed "City Bacteriologist", by 28th July, 1958.

City Chambers, Glasgow. WILLIAM KERR, Town Clerk.

GLASGOW. CORPORATION OF GLASGOW. Health AND WELFARE DEPARTMENT. Applications are invited for the whole-time appointment of MEDICAL ASSISTANT BACTERIOLOGIST. Applicants should have practical experience of routine medical bacteriology and serology and preferably hold a Diploma in Public Health. Salary scale £1050–£50(3)–£55(5)–£1475 p.a. Post is superannuable, subject to medical examination.

Applications, stating age, qualifications and experience, with names of 3 referees, should reach me by 31st July, 1958, in an envelope marked "Appointment of Medical Assistant Bacteriologist". WILLIAM KERR, Town Clerk.

City Chambers, Glasgow.

MONMOUTHSHIRE COUNTY COUNCIL. The Council invite applications from duly qualified registered medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER to the Refraction Unit. Preference will be given to applicants with experience in refraction work. The salary will be at the rate of £1050 p.a., rising by annual increments of £50 to £1200 and then by £55 to a maximum of £1475. The successful candidate will be required to act under the direction of the County Medical Officer, to devote his/her whole time to the work of the County Council and to reside in such place as the County Council may determine. The post will be subject to the provisions of the Local Government Superannuation Acts and Regulations and to a satisfactory medical examination.

Application forms and conditions of service can be obtained from the County Medical Officer, Cambria House, Caerleon, to whom they should be returned, accompanied by copies of not more than 3 testimonials, not later than 14th July, 1958.

VERNON LAWRENCE, Clerk of the Council.

County Hall, Newport, Mon.

SOUTH WESTERN GAS BOARD. Applications are invited for appointment as CHIEF MEDICAL OFFICER to the Board. Commencing salary between £2000 and £2500, depending on experience and qualifications. Applicants should have had previous industrial experience and experience of general practice would also be an advantage.

Applications, accompanied by names of 2 referees, should be in by 14th July, and should be sent to the undersigned, from whom further particulars can be obtained.

A. H. MORLAND, Secretary and Accountant.

9A, Quiet-street, Bath.

SALFORD. CITY OF SALFORD. Health Department. SENIOR ASSISTANT MEDICAL OFFICER. Applications for this post are invited from qualified medical practitioners preferably with the D.C.H. or D.P.H. qualification. The appointment will be permanent and whole-time and the salary will be in accordance with the scale—£1465, rising by £55 annually to £1795 p.a. The commencing salary will be fixed within the scale according to qualifications and experience. The post is superannuable.

Form of application and other particulars relating to the appointment may be obtained from the Medical Officer of Health, 143, Regent-road, Salford, 5, by whom applications (including names of 2 referees) must be received not later than 19th July, 1958. R. RIBBLESDALE THORNTON, Town Clerk.

MIDDLESEX COUNTY COUNCIL. County Health DEPARTMENT. ASSISTANT MEDICAL OFFICER (Male or Female) required in Area 8 (Hayes/Harlington, Ruislip-Northwood, Uxbridge, Yiewsley/West Drayton). Duties mainly in connection with supervision of health of mothers and young children attending infant welfare centres, toddlers clinics and day nurseries, routine medical inspections at schools and attendance at minor ailments treatment clinics for schoolchildren. Experience in dental anæsthesia and ascertainment of educationally subnormal children desirable. Salary £1050–£50 (3)–£55 (5)–£1475 p.a. inclusive. Established, pensionable, subject to medical assessment. Prescribed conditions.

Apply (no forms), with names of 2 referees, to Area Medical Officer, Local County Offices, High-street, Uxbridge, Middlesex, by 19th July. (Quote X.673 TL.) Canvassing disqualifies.

NORTHAMPTON COUNTY BOROUGH. Assistant MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. (£1050–£50–£1200–£55–£1475.)

Particulars and form of application, returnable by 21st July, from Medical Officer of Health, 7A, St. Giles'-square, Northampton. C. E. VIVIAN ROWE, Town Clerk.

OLDHAM. COUNTY BOROUGH OF OLDHAM. Applications are invited from registered medical practitioners for the appointment of ASSISTANT MEDICAL OFFICER OF HEALTH AND ASSISTANT SCHOOL MEDICAL OFFICER which affords an excellent opportunity for obtaining experience in the Public Health and School Health Services. Salary £1050–£50–£1200–£55–£1475 p.a. The point of entry will be fixed according to qualifications and experience. The appointment is superannuable and subject to medical examination.

Applications, stating age, qualifications and experience, should be forwarded to the Medical Officer of Health, Public Health Department, Town Hall, Oldham, together with copies of 2 testimonials or the names of 2 persons to whom reference may be made. EDWARD HAINES, Town Clerk.

SWINDON. BOROUGH OF SWINDON. Appointment of DEPUTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER. Applications are invited from duly qualified medical practitioners holding a Diploma in Public Health or similar qualification, for the appointment of Deputy to the Medical Officer of Health and Principal Borough School Medical Officer, who is also Area Medical Officer under the Wiltshire County Council. The salary is at the rate of £1396 4s. 3d. p.a., rising by 2 increments of £60, 2 of £57 14s. 7d. and 1 of £31 16s. 5d. to a maximum of £1663 9s. 10d. p.a.

Applications, together with the names of 3 persons to whom reference may be made, must be submitted to the Town Clerk, Civic Offices, Swindon, by 19th July, 1958. Further particulars will be supplied on request.

TREASURY MEDICAL SERVICE. Applications are invited from medical practitioners, practising in the districts detailed below, for appointment, in a part-time and mainly advisory capacity, as LOCAL TREASURY MEDICAL OFFICER for each of the places or groups of places shown. The town shown in parentheses after the place-names indicates the Head Post Office Area in which the place, or group of places, is situated. Successful applicants will be required to examine and report on the condition of certain Government Officers, teachers, candidates for appointment, &c., who may be referred to them from time to time; and to attend when summoned to an emergency case of accident or sudden illness occurring in a Government office in the neighbourhood. Fees for this work, and mileage allowance where necessary, will be paid on a scale agreed with the British Medical Association.

Intending applicants should write, within 14 days, to: Treasury Medical Adviser, Treasury Chambers, Whitehall, S.W.1, for a form on which application may be made. Applicants should be not more than 60 years of age.

The places for which applications are invited are as follows:—

ENGLAND AND WALES

Headcorn (Ashford, Kent).
Pill (Bristol).
Fulbourne and Cherry Hinton (Cambridge).
Wigton (Carlisle).
Great Baddow, &c. (Chelmsford).
Bures (Colchester).
Tadworth (Epsom).
Dunsford (Exeter).
Immingham (Grimsby).
Liphook (Haslemere).
High Wycombe (High Wycombe).
Seaford (Lewes).
London West Central (London).
Gorton and Manchester 18 (Manchester).
Tyldesley, &c. (Manchester).
Storrington (Worthing).
Stoke-Sub-Hamdon (Yeovil).

NORTHERN IRELAND

Bangor (Belfast).
Irvinestown (Enniskillen).

SCOTLAND

Brodick (Isle of Arran) (Ardrossan).
Auchterarder (Crieff).
Lochgilphead and Ardrishaig (Lochgilphead).
Newton Stewart and Bargrennan (Newton Stewart).
Crail and Kingbarns (St. Andrews).

General Practice

For an ***Executive Council post*** *(England and Wales) apply on form E.C.16A obtainable from the council. Mark envelope "Vacancy."*

FRESSINGFIELD, SUFFOLK. Applications invited for Rural VACANCY which will arise due to resignation on 30th September, 1958. List at present approximately 1550 (mainly dispensing). "Restricted" area. House including surgery premises available for purchase. Apply on Form E.C.16A by 19th July to undersigned from whom further details may be obtained. A. P. LUCAS, Clerk,

East Suffolk County Executive Council.
32, Silent-street, Ipswich.

PORTSMOUTH, HAMPSHIRE. Applications invited for VACANCY, due to resignation, in South Portsmouth (Intermediate area). List at present 1460. Residence/surgery available for purchase. Successful applicant would be required to take over practice 1st September, 1958. Apply on Form E.C.16A to the undersigned not later than 14th July.

A. R. GODDARD,
Clerk of the Portsmouth Executive Council.
66/74, Pearl Buildings, Commercial-road, Portsmouth.

SOUTHBOURNE, BOURNEMOUTH. "Intermediate" area. Death VACANCY. Male. List approximately 2400. Premises likely to be available. Applications must be received not later than 12th July, 1958, by the Clerk, Bournemouth Executive Council, 460, Christchurch-road, Boscombe, Bournemouth.

WOLVERHAMPTON. Applications invited for Vacancy (Urban) caused by resignation. National Health Service list at present approximately 2055 of whom approximately 850 are pupils and staff of a training college and a local school. It is not known in the case of either the school or the college whether the patients will elect to remain on the list of the doctor appointed. The present surgery accommodation is available to rent. Apply on Form E.C.16A by 12th July, 1958, to—

G. A. FORSTER,
Clerk of the Wolverhampton Executive Council.
Lynton-street, Wolverhampton.

Miscellaneous

IMPERIAL CHEMICAL INDUSTRIES LIMITED

WILTON WORKS

invites applications for the post of full-time

ASSISTANT MEDICAL OFFICER

The successful applicant will be responsible to the Senior Medical Officer and will undertake the normal duties of an industrial medical officer. He will work in a large, recently opened medical centre which contains the latest equipment for basic and ancillary services.

Salary will be commensurate with age and experience, but not less than the B.M.A. minimum rate.

Experience in any of the following: general practice, casualty work, the Services; Industrial Medicine and/or D.P.H., D.I.H., or other postgraduate qualifications would be an advantage.

An application form, together with further particulars, may be obtained from the Staff Manager, Imperial Chemical Industries Limited, Wilton Works, Middlesbrough, Yorkshire, quoting reference No. 515/113.

CONSULTING PATHOLOGIST

required by National Iranian Oil Company Limited to supervise and direct the Pathological Department in South Persia based in Abadan Hospital. All types of investigations including histology, microbiology, bacteriology, chemistry, serology and haematology as well as water, milk and food analyses are carried out. Applicants should have a higher medical qualification and/or a Pathological Diploma, and have had 8 years' training and practice in the specialty. Ability to train personnel in the Department is important. Age 35–50. Married accommodation and family passages available. 2-year assignment, with a possible extension after paid home leave; salary not less than £3900 a year.

Apply with brief details for further information to Manager, Personnel Department, IRANIAN OIL SERVICES LIMITED, 3, Finsbury-square, London, E.C.2.

Part-time Consulting Rooms to be Let in Harley-street. Rents from £50 per half-day session. Apply: ELLIOTT, SON AND BOYTON, 88/87, Wimpole-street, London, W.1. WEL. 8367.

Required, mid-August, Secretary, 18-25 years. Interesting work for Aural Consultant in Harley-street.—Application by letter to 139, Harley-street, W.1.

"Pregnancy Diagnosis by the Xenopus Method," 24-hour service. Send specimens of urine and £2 2s. fee. Haematology, Biochemistry, Flame Photometry.—WELBECK BIOLOGICAL LABORATORIES, 26, Park-crescent, Portland-place, W.1 (MUSeum 5386–7).

The British Journal of Medical Hypnotism. Quarterly, £2 2s. p.a.—Orders to the publishers, 4, Victoria-terrace, Hove, 3, Sussex.

Microscopes. Highest prices paid for good modern types. Send or bring your equipment for valuation.—WALLACE HEATON LTD., 127, New Bond-street, W.1.

Old medical and scientific books, pictures, manuscript notebooks, letters, &c., wanted by a collector.—Address, No. 343, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

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Doctors requiring applications, theses copied: Write to MANTON (WESTMINSTER) LTD., 98, Victoria-street, S.W.1 (VIC. 0141), who are specialists.

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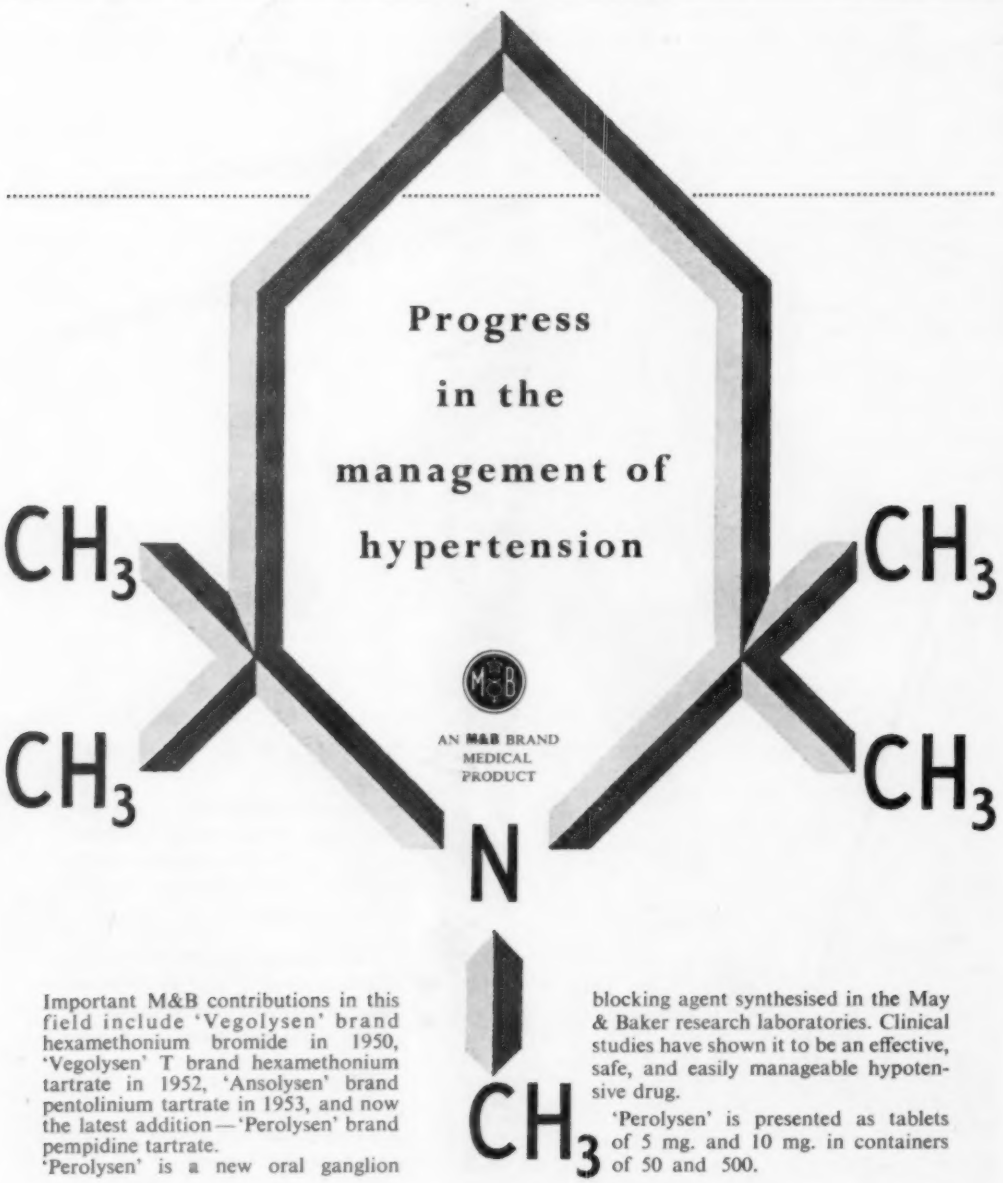

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